ANGLIA RUSKIN UNIVERSITY

FACULTY OF HEALTH, EDUCATION, MEDICINE AND SOCIAL CARE

PROMOTING EDUCATION FOR SUSTAINABLE DEVELOPMENT IN THE EARLY YEARS: AN ACTION RESEARCH PROJECT

OPEYEMI ENIOLA OSADIYA

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ABSTRACT

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In response to growing global awareness of the importance of sustainability for young children's lives and learning, this study explores how teaching can be shaped to promote better knowledge and practice of education for sustainable development (ESD) in an early years setting in England. The study is grounded in review of existing research and policy on ESD in early childhood education and care, particularly in the light of uncertainties faced by practitioners about how much emphasis to place on ESD within a curriculum that is silent on sustainability.

Practitioners, and children aged 2-4 years, in an Essex day nursery participated in three phases of collaborative action research by engaging in various co-designed projects, as a means of co-constructing understandings of sustainability. Vygotskian socio-cultural theory, funds of knowledge from Moll et al. and Noddings' ethics of care are brought together to provide theoretical framing for the study. Data collection methods included: a 'pedagogy of listening'; practitioner interviews; observations; documentation and practitioner reflections. Evidence from these sources was analysed thematically at the end of each phase, with findings forming the basis of shared reflections for the next phase.

Final cross-phase analysis of findings led to identification of overall key themes from the research. These show that teaching and learning for sustainability within an early years setting is fostered through integrated approaches to play where participants' interests are acknowledged. Participants' knowledge and practices of sustainability grew as they increasingly recognised and valued the importance of collaborative learning within an ethics of care. Practitioners gained knowledge of new ways of working on topics related to sustainability.

Based on these outcomes, the study makes four contributions: it provides insights for new ways of working with children on sustainability issues; it explores approaches that provide strong structures to develop ESD within the curriculum; it proposes a methodology that positions practitioners as co-researchers; and strengthens the notion of care in teaching and learning for sustainability in the early years.

Key words: sustainability; action research; pedagogy of listening; ethics of care; early childhood**;** funds of knowledge; socio-cultural theory.

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List of abbreviations used in the study

BTEC: Business & Technology Education Council

CCLD: Children's Care, Learning & Development

ECEC: Early Childhood Education and Care

EYFS: Early Years Foundation Stage

ESD: Education for Sustainable Development

GAP: Global Action Programme

HSC: Health & Social Care

MDGs: Millennium Development Goals

NVQ: National Vocational Qualification

SD: Sustainable Development

SDGs: Sustainable Development Goals

SEEd: Sustainability and Environmental Education

UN: United Nations

UNESCO: United Nations Educational, Scientific and Cultural Organisation

UNDESD: United Nations Decade of Education for Sustainable Development

WCED: World Commission on Environment and Development

Chapter One: Introduction and background to the study

Increasing awareness of humanity's exposure to developments and challenges due to rising world population and deepening global inequalities have led to major environmental, social and economic problems such as climate change, loss of biodiversity, inequity and toxification of water, air, soils and bodies (Davis, 2010; Siraj-Blatchford, Smith & Pramling Samuelsson, 2010; Wals, 2017). Children on their part, are disproportionately affected by these global challenges as they will live longer with the socio-ecological and economic consequences of lifestyle and development choices made by present generation. Impacts of these challenges on their physical and cognitive development are visible in terms of specific harms they suffer such as escalated health impairments from chronic preventable diseases including diarrhoea, diabetes, cancer, respiratory infections and heart disease as well as the growing impacts of mental health disturbances like depression and anxiety (Davis, 2007; McMichael, 2013; World Health Organisation, 2017).

Tackling the effects of these negative developments requires actions that have the tendency to disrupt and transform highly resilient but inherently unsustainable routines, lifestyles and systems (Wals, 2017). This awareness has led to global efforts championed by the United Nations (UN) for collaborative action by governments of nations to put an end to unsustainable practices that are wicked, ill-structured, ill-defined, inter-connected and contextual (UN, 1972, 2002; Davis, 2010; Wals, 2017). Global efforts to encourage sustainable ways of living view sustainable development as the ability to make developments sustainable in ensuring that it meets the needs of the present without compromising the ability of future generations to meet their own needs (WCED, 1987). Ironically, it is the same humanity responsible for the global chaos that has the ability and responsibility to make amends and reverse the trend of events (Wals, 2017).

Early childhood education and care (ECEC) has a role to play in joining the global efforts to tackle the mentioned negative developments. It is the expectation that young children will have more time to work on these challenges (McMichael, 2013; World Health Organisation, 2017; Wals, 2017). As these issues are complex, ambiguous and contested, raising children's awareness of them alone is insufficient for resolving or improving them. Children need to be equipped with skills and capacity to meaningfully and appropriately address these issues. ECEC therefore has the duty to support

children to respond more effectively to sustainability challenges than, arguably, the generations of their parents and grandparents (Wals, 2017; Croft, 2017). It is also expected that children will be able to benefit from intergenerational dialogue and expanded learning opportunities in their learning for sustainability (Wals, 2017).

This study is an action research project conducted with 16 practitioners and 101 children aged 2-4 years in a south Essex day nursery over a period of two years. It explores ways in which children's and practitioners' knowledge, values, attitudes, skills and practices of sustainability can be understood and promoted within an early years setting in England. Noting that England's national statutory guidance for fostering children's learning and development from birth to 5 years old, the Early Years Foundation Stage (DfE, 2017), is silent on 'sustainability', this study is designed to explore ways of working to promote teaching and learning for sustainability in the early years in response to calls for education for sustainable development (ESD) to begin from the earliest years of education (Pramling Samuelsson & Kaga, 2008; Davis, 2010; Wals, 2017).

The recognition by global community of children's ability to contribute to sustainable development acknowledges that they not only have rights as portrayed in the United Nations Convention on the Rights of the Child (UNCRC) (1989) but are active participants with the capability to make contributions to their societies' present and future (Pramling Samuelsson & Kaga, 2008; Davis, 2010; Wals, 2017). In essence, children should be encouraged to participate in meaningful activities that will not only enhance their knowledge and understanding of sustainability issues but empower them to make contributions to a sustainable world such as by taking actions that are honoured by educators in early years settings (Pramling Samuelsson & Kaga, 2008; Davis, 2010; UNESCO, 2010a; Mackey, 2012; Hedefalk, Almqvist & Lidar, 2013; Wals, 2017; Huggins & Evans, 2018).

1.1 Personal motivations for the study

Personal motivations for this study are drawn from my experiences, firstly as a student on the MA Early Childhood Studies programme at Anglia Ruskin University in the United Kingdom; and secondly, from recollections of events when I was growing up in Nigeria, my birth country, in the 1980s. Whilst on the MA Early Childhood Studies

programme, I participated in a module entitled: 'Comparing Outdoor Learning Experiences', which focused on discussing and critiquing a range of outdoor learning environments in the UK, as well as in other countries; comparing different theoretical perspectives on the benefits of outdoor learning for children and young people; researching perspectives on the learning and developmental potentials of outdoor learning; and identifying current trends in education for sustainable development (ESD). Examining current trends in ESD enabled me to reflect deeply about the impact of human actions, not only on the environment, but on other aspects of human existence.

One fundamental aspect of human actions that rose to the forefront of my reflections was that of fairness in dealing with others. This aspect became pronounced when I remembered the widely reported case of a small fishing village called Koko in the southern part of Nigeria, which drew the world's attention in 1988 when toxic waste from two Italian business companies was dumped there. The businessmen representing those companies had falsely presented the 18,000 drums of hazardous waste as building materials for a proposed fertilizer manufacturing company in Nigeria and these were offloaded in a local resident's vacant yard for $100 per month. The businessmen had clearly capitalised on the yard owner's poverty to lure him into accepting substances that he otherwise would have refused. Even though the Italian government was eventually forced to remove the waste from Nigeria's shores, damage had already been caused to the yard owner, local residents and removal personnel in terms of their health and well-being as the leaked substance from the drums had damaged the land and brought in illnesses ranging from stomach upsets and headaches to failing sight and death though pollution (see Brooke, 1988).

Similar events that occurred in Guinea, West Africa in the late 1980s where about 15,000 tons of waste from Philadelphia America was dumped (see Krunk, 2016); and in the Ivory Coast that had toxic waste dumped by a multinational company Trafigura in 2006 (see BBC News Online, 2010); show how residents' well-being was jeopardised when unfair dealings led to poisoning of their living environment, thus highlighting the dangers humanity faces if we fail to make improvements to our practices. In my view, these occurrences represent injustice at its highest level, as they reflect Europe's view of Africa as a wasteland and the people as waste beings (see Buck, 2017). The urgent need to combat occurrences where less developed countries

are made to bear the effects of unsustainable actions of richer countries has become a major world-wide concern addressed through a series of international conferences and initiatives that will be discussed in the next chapter.

My reflections on these global issues led to a commitment to the promotion of peaceful and harmonious relationships, and the acquisition of some positive lifelong values, attitudes, skills and practices that are essential to making the world a better place for all to live in. This commitment became the driving force behind my decision to undertake a doctoral degree in early years education with focus on promoting education for sustainable development in the early years.

I believe that there is great potential to instigate changes for a more sustainable world and a better future from intervention in the early years (Pramling Samuelsson, 2011; Engdahl, 2015) as it is at this stage that children's development of knowledge, positive values, attitudes and skills, necessary for sustainable living both for now and in the future, can first be fostered (Davis, 2009; Siraj-Blatchford, Smith and Pramling Samuelsson, 2010; Mackey, 2012; Engdahl, 2015; Wals, 2017). Sustainability should be viewed as the centrepiece of high-quality early childhood education and care due to its critical role in preparing children – our present and future citizens – for the task of aiding societies to make the necessary transitions to sustainability (UNESCO, 2014; Pramling-Samuelsson, 2019).

1.2 The research aims and question

Evidence from contemporary issues have shown how children are exposed to as well as affected by global developments and challenges, and the need for them to be empowered with the capability to actively contribute to their society's present and future (Pramling Samuelsson & Kaga, 2008). This necessity laid the foundation for this study as I aimed to explore ways in which children's and practitioners' knowledge, values, attitudes, skills and practices of sustainability can be understood and promoted within an early years setting. This study addresses the following main question:

- How can teaching and learning activities be shaped to promote better knowledge and practice of ESD within an early years setting?

To answer this question, I deemed it important to first find out what the formative influences on practitioners' understandings of the concept of ESD are, and how they describe this concept. This enabled us to establish a base for collaborative working on the topic of research and to arrive at shared understanding of the research aims.

To address these issues, the study's design as an action research enabled me to work collaboratively with practitioners and children in a day nursery for a period of two years. This enabled practitioners and I to co-design activities for children's learning for sustainability. Other aspects of sustainability, that arose from events during the study were developed and used as bases for sustainability teaching and learning. In planning my research, I was influenced by a range of pre-existing literature on early childhood education and care for sustainability, discussed in the next section.

1.3 A summary of reviews of research in early childhood ESD – laying the foundation for my research

A key literature survey for the period 1996-2007 by Davis (2009) revealed that most studies focussed on the teaching of ESD as mainly related to environmental questions. She categorised the studies as education *in* nature due to their explorations of young children's relationships with nature or education *about* nature as they discussed young children's understandings of environmental topics and issues such as knowledge about how natural systems work e.g. water cycles and how plants grow. In the period under review by Davis (2009), there was an absence of studies that examined young children's learning and capabilities in responding to issues such as water or energy conservation which is referred to as education *for* nature. Evidence in a review by Hedefalk, Almqvist & Östman (2015) for the period 1996-2013 complements Davis' review by its clearer focus on two themes of sustainability such as on how teachers understand ESD as well as how ESD can be implemented in educational practice.

The review recorded findings from projects where children have acted for change and dealt with sustainability issues by exploring them as well as testing actions for change. The Australian study by Deans & Brown (2008) showed children acting for the environment by clearing up debris accumulated on the riverbanks in a project focused on water preservation. Another example is that recorded by Gambino, Davis &

Rowntree (2009) where children supported animals exposed to extinction like the Greater Bilby.

The review by Hedefalk et al. (2015) also looked at teachers' understanding of ESD in ECEC. It recorded findings where teachers' understanding of ESD was related to teaching children facts about the environment (Sandberg & Ärlemalm-Hagsér, 2011), developing children's critical thinking skills (Ärlemalm-Hagsér & Sandberg, 2011; Dyment et al, 2013), whilst findings from McNaughton (2012) show teachers involving children in meaningful projects to enable them to make changes in society. These findings highlight the need for adults working with young children to have adequate knowledge about children, and awareness of relevant sustainability questions and issues to explore with them. This also includes an understanding of how to teach children about sustainability issues in relation to existing play-based pedagogical approaches in early childhood education and care (Edwards & Cutter-Mackenzie, 2013).

The necessity for practitioners in early childhood settings to be knowledgeable on sustainability issues also highlight an expectation of enhanced quality teaching and learning in practice within a curriculum that is open enough to afford practitioners with opportunities to think, reflect and be innovative (Sylva et al., 2004; Taggart et al., 2015). The realisation that educating and achieving the goals of sustainable development for young children is dependent on the educators' skills and knowledge makes staff education a precondition for involving children in learning about sustainability in ECEC (Pramling Samuelsson & Park, 2017). It is still apparent that most research in sustainable development in ECEC remains related to environmental questions (Ärlemalm-Hagsér & Pramling Samuelsson, 2018)

The urgent need to escalate the task of moving the world towards a sustainable future requires development of schemes to foster and enhance individuals' critical thinking, participation and moral commitment to actions that will positively affect present and future humans' and non-human interactions with the natural world (United Nations, 2016; Ärlemalm-Hagsér & Pramling Samuelsson, 2018). Concurrent with the need for children to access quality education with powerful emphasis on sustainability issues is the requirement for educators to keep the intentions and values of ECEC foremost and to support children's developing skills and capabilities, their sense of critical thinking

and democracy. Additionally, they must foster children's world of play, creativity and agency, as these are important qualities for sustainability in a world that values academic preparation for school subjects. These requirements have been adequately considered in this study where I worked collaboratively with practitioners to support children in developing their sense of critical thinking and democracy as they gained skills and capabilities for sustainability.

Early childhood educators have been found to struggle with the complexity and ambiguity of sustainability issues especially those that relate to the broader economic, social and political knowledge (Ärlemalm-Hagsér & Pramling Samuelsson, 2018). To effectively embed ESD in ECEC practice, practitioners should be supported with professional development on both the theory and practice of sustainability (Engdahl & Rabušicová, 2011; Ogelman, 2012; Luff, Miles & Wangui, 2015). Professional development gives practitioners a broader understanding of the concept and make them more able to work actively with both environmental and sustainability issues with children than those who have not had such support (Tarr, 2008, Ärlemalm-Hagsér & Sandberg, 2011; Ward, 2014; Hill et al, 2014). In addition, a study by Wright, Luff & Emre (2018) highlighted the need for practitioner support as it found that some of them were unable to link the benefits of play with reused and recycled materials to a wider philosophy of conserving resources and global sustainability. Their study also identified gaps in practitioners' attitudes to, and perceptions of, sustainable play, and how this is implemented in English settings. On this note, this study has considered the need to develop practitioners' knowledge and skills through an approach that prompts critical and creative thinking relevant to global issues on a local level.

Earlier studies (Deans & Brown, 2008; Gambino et al., 2009) highlighted the need to create opportunities and time for reflection on concrete situations in practice which include providing time for educators and children together. This has the capability to generate conversations and discussions that enable participants to arrive at shared understandings. This is an important part of developing a 'culture of sustainability' that can generate transformative thinking, practices and relationships in early childhood education (Davis & Gibson, 2006, p15). Such holistic approaches demand much more than the introduction of a range of sustainability activities or projects for children. The approaches need to emanate from a collective view of practitioners who desire to make changes to their practice, embed sustainability and to create long

lasting, positive relationships to their settings' culture. These highlighted challenges have been considered in this study and instrumental to how holistic approaches to issues of sustainability emanating from a collective view of researcher and practitioners have been incorporated into the culture of the early years setting.

1.4 Contributions of this study to the field of ESD

The study explores the ways in which children's and practitioners' knowledge, values, attitudes, skills and practices of sustainability can be understood and promoted within an early years setting. Firstly, the study will contribute to knowledge in the field of early childhood ESD which, it is acknowledged, still relies upon a small research base upon which to grow the field (Davis, 2009; UNESCO, 2014). This study represents my contributions, expertise and scholarly insights into research in early childhood education and care for sustainability (Davis & Elliot, 2014; UNDESD, 2014).

Secondly, the study takes up the challenge of providing children with quality education with a powerful emphasis on sustainability and addresses the need to equip practitioners with the confidence and knowledge to teach sustainability issues to young children. It therefore focuses on describing how practitioners are supported in acquiring knowledge, skills and capabilities in the area; how they then introduced sustainability issues to children through focused quality education; as well as how children engaged with these issues in the setting.

Thirdly, in terms of contribution to professional practice, it is expected that findings from this study will have broader implications for practitioners and their use of the Early Years Foundation Stage (EYFS). The study highlights new knowledge and ways of understanding the development of knowledge, attitudes and practices for sustainable development through social co-constructions. These can inform pedagogy and professional development in early years ESD through the explicit incorporation of ESD values into the EYFS.

Finally, the study brings ethics of care to the forefront of teaching and learning of sustainability issues in early childhood education and care. Ethics of care are seen as fundamental to practice in the teaching of young children for sustainability through encouraging them to care, not only for themselves and others, but for animals, plants

and materials, either on their own, sometimes with other children or with adults (Wals, 2017).

1.5 Outline of the thesis

I have provided an introduction and background to the study in this first chapter that presented the research aims and question and then provided a summary of reviews of research in ESD that laid a foundation for my study. These reviews provided insights into challenges and developments in the area and have become instrumental in shaping the research process enabling me to claim contributions this study makes to ESD in early childhood education and care.

Further contextual information for this thesis is explored in Chapter Two where I examine some key definitions and interpretations of sustainable development, its relevance to early years education, in addition to related concepts like the UNESCO sustainable development goals, the Earth Charter and Little Earth Charter. This chapter offers a description of the immediate context of the study as well as outlining issues and challenges that are associated with teaching and learning for sustainability in the early years in England.

In Chapter Three, I review existing studies relating to environmental education and sustainable development in the early years from key authors across the globe. The literature review is presented under key themes that were consistent throughout the studies and through which the topic of ESD is explored. This sets the scene for the theoretical framework that guided data collection for this study in Chapter Four that considers three core theoretical perspectives – Vygotsky's socio-cultural theory, funds of knowledge theoretical perspective by Moll et. al., as well as the ethics of care as articulated by Noddings, which, though different, are linked to one another. Together, these form a theoretical framework that shows how and why knowledge is constructed and by whom, especially with regards to the research participants, and provides lenses for meaning- making in this study.

The theoretical framework leads to the formulation of the research methodology and research design as set out in Chapter Five, where I draw upon the social constructivist framework of qualitative enquiry to apply participatory collaborative approaches with practitioners and children in a day nursery. I also describe the research design and

stages, and ethical issues such as my conformity to ethical standards set out by the university with regard to participants' informed consent, their voluntary participation in the research process as well as issues of confidentiality and potential risks were adequately considered.

In Chapter Six, I discuss the research setting and methods of data collection derived from my chosen methodology of action research that enabled me to carry out research *with* the participants and not *on* them. I also consider issues of validity and reliability in my chosen mode of research as I discus how the research aims were communicated to and agreed with the participants, how the research process developed through collaborative working with practitioners, how data were collaboratively collected and how findings and analysis were shared to demonstrate my upholding of democratic intentions.

I present and analyse findings from the research process in Chapters Seven, Eight and Nine. These findings provided answers to the research question as I considered them in relation to the approaches to sustainability identified in Chapter Three.

Finally, in Chapter Ten, I present a synthesis of the key findings as I evaluate them in addition to making appropriate recommendations from them. After emphasising the contributions of my study to research in the fields of early childhood education and care, I reflected on the challenges, strengths and limitations of the study whilst making suggestions for further research.

1.6 Summary

This introductory chapter outlines how my research idea was conceived and provides an overview of the study. This is set in a contextual framework of existing research in ESD.

In Chapter Two, I further examine the context in which my research is situated focusing on issues of sustainable development, relevance of ESD to early childhood education and care and the current position of early childhood education and care ESD in England.

Chapter Two: Contextual information for the study

In this chapter, I provide the contextual information for the study focusing on key aspects of sustainable development significant to the research. The discussion starts with an outline of the concept of sustainable development, its history and aims, exploring definitions of sustainable development and highlighting their key meanings and the interpretations that are used to shed light on the concept in this study. I then focus on the millennium development goals (MDGs) and the current sustainable development goals (SDGs) highlighting those targets that specifically relate to key areas of early childhood and quality early childhood education. This leads on to a discussion of the relevance of ESD in early childhood education and care.

A key tool of sustainable development is the Earth Charter (2000) that I considered relevant for this study as it is an inclusive and ethical framework for building a just, sustainable and peaceful society for the 21st century (see earthcharter.org). My reference to the Earth Charter leads to discussions of how its principles were conveyed to children as young as those in my study through its child-friendly version – the Little Earth Charter (2009).

I continue the chapter with a discussion of the context for the study in England, examining an outline of current early years education provision in England which provides background introduction into the need for sustainability to be integrated into the early childhood curriculum. I also offer my personal understanding of sustainable development and how it helped to shape this study.

2.1 Sustainable development

In Chapter One, I highlighted how awareness about the accelerating deterioration of the natural environment due to humanity's selfish behaviours and their consequences, not only on economic and social development, but also on some human and non-human existence, provoked international concerns about how best to deal with these issues. The period 1972 to 1992 saw a series of international conferences, particularly gaining momentum in 1983 with the convening of the World Commission on Environment and Development (WCED) by the United Nations with representatives from both developed and developing countries (see Appendix 1 on key global conferences and initiatives on ESD). The Commission produced the landmark

publication titled “Our Common Future” (the Brundtland Report) that provided a stark diagnosis of the state of the environment four years later and provided the now commonly accepted definition of sustainable development as “development that meets the need of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987: 43-45).

Various interpretations of the definition by WCED have been proposed over the years as the concept has remained contentious (Davis, 2015). The view of sustainable development relating to humanity’s need to desist from causing irreversible damage to natural capital in the long term in return for short-term benefits (Yan & Fengfeng, 2008), was re-echoed in Prince’s (2010) interpretation as the goal of harmonious co-existence of humans with their ecological systems on planet Earth to guarantee sustainable living for future generations. In addition, the view of sustainable development as one that aims to provide justice with, to, and for, future generations (Engdahl & Rabušicová, 2011) was re-echoed by Suduc, Bîzoi & Gorghiu (2013) who argued that provisions for sustainable development can only be effective if there is a balance between factors that define the quality of life in general and which circumscribe three dimensions namely: economic, social and environmental. These dimensions were first established by the United Nation’s “Earth Summit” in Rio (1992) and regarded as the three interdependent and mutually reinforcing pillars of SD that need to act together as any practices and policies developed without taking each into account could either turn out to be weak or fail completely.

However, I subscribe to Sen’s (2013) criticism of the WCED’s (1987) ‘need’ centred view of development as incomplete. His argument rested on the view that whilst it is humanity’s duty to solve problems of unsustainability, human beings need to be viewed as agents who can perform actions individually or collaboratively for effectiveness, and not as consumers or patients whose needs must be catered for. His argument calls for a new vision of human beings as agents of change who can reshape the world when given opportunities to think, assess, evaluate, inspire, agitate on issues at appropriate times. Based on this argument, Sen (2013) redefined sustainable development as:

“*development that prompts the capabilities of present people without compromising capabilities of future generations*” (p.11).

Sen further argued that in the quest to re-shape the world through supporting individuals' capabilities in the stated areas, there is need to recognise that human beings are actively engaged in practices within their social culture, with their freedom, aspirations, expectations and capability hindered or limited by political and institutional structures. Sen's capability-centred approach to SD aims to integrate the idea of sustainability with the perspective of freedom so that human beings can be seen not merely as creatures who have needs but primarily as people whose freedoms really matter.

Following Sen, I approached the theoretical framework for this study by positioning the participants as people whose views matter as they actively and collaboratively engaged in practices within their cultural contexts. I also realised that participants can re-shape their practices when they are given opportunities to think, assess, evaluate, inspire and debate on issues at appropriate times. I believe that human beings, especially young children, can be supported to become agents for change for sustainability if they are helped to critically think about and assess their actions to reshape the world. Hence, I view the capability of participants in this study in the light of their ability to promote actions for sustainable development through democratic processes, dialogues and critical feedback from others.

Sen's argument that individual or collaborative agentic actions for effective sustainability highlight the processes of social learning like those which enhance societal capacity for the environment (UNESCO, 2002). Enhancing societal capacity in this respect involves not only specific education and training programmes, but also creating policy and legislation that provides opportunities for teaching to encourage new ways of behaviour (personal, community and corporate). In addition, social learning involves reflection on humanity's perceptions of their acts and consequences (UNESCO, 2002). These social learning processes highlight sustainable development as a catalytic vision that can help accelerate positive change, rather than a neatly defined concept.

Sustainable development is also viewed as a moral precept linked to notions of peace, human rights and fairness, or primarily as a matter of culture due to it being concerned with positive values that people cherish and how humans perceive their relationships with others and the natural world (UNESCO, 2002). To achieve sustainable

development, there is an urgent need for humans to acknowledge the interdependent relationship between themselves and the natural environment. No single social, economic, environmental or political objective can be pursued to the detriment of others, grounding sustainable development in four systems - the interdependent dimensions of:

1. The natural environment (biophysical systems) which provides the life support systems for all human and non-human life;
2. Social systems that provide ways for people to live together peacefully, equitably and with respect for human rights and dignity;
3. Economic systems such as those that provide a continuing means of livelihood e.g. jobs and money, for people;
4. Political systems through which power is exercised fairly and democratically to make decisions about the way social and economic systems use the natural environment (UNESCO, 2002:8).

These four dimensions appear diagrammatically in a later UNESCO (2010b) publication shown below:

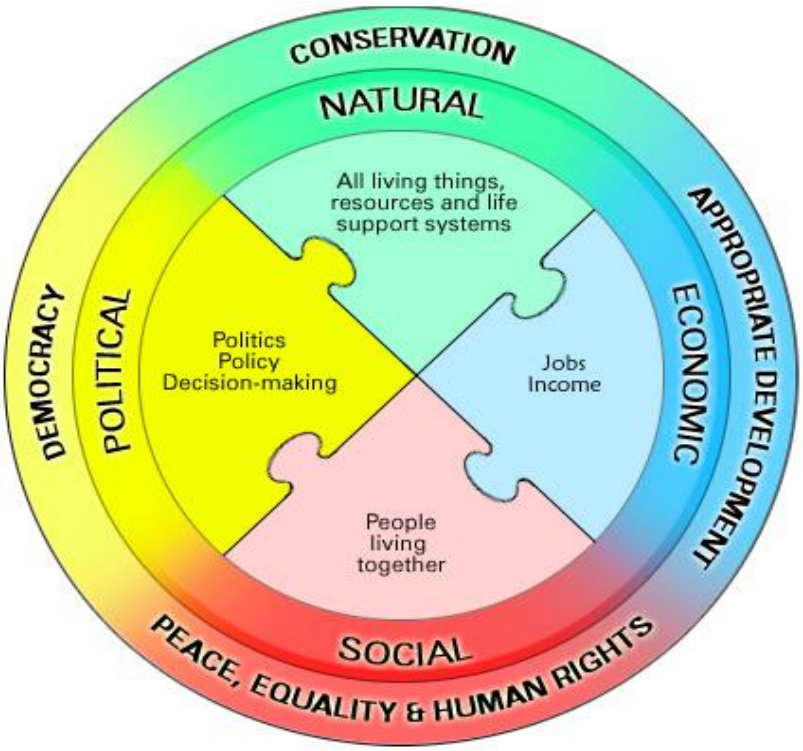


Diagram 2.1: UNESCO (2010b) Four dimensions of sustainable development.

It is these four dimensions (rather than previously mentioned three - environmental, social and economic) that I adapt for my thesis because I believe that they support a more holistic interpretation of sustainable development as a need to establish social, economic and political justice for all people in addition to its striving for an environmentally sustainable world and respect and care for the non-human world (UNESCO, 2002; Siraj-Blatchford et al., 2010; Ärlemalm-Hagsér, 2013b). This is a step ahead of ideas of human development that cast development as mainly about economic growth and ignore or diminish social and environmental dimensions (Davis, 2010). Linking these four dimensions requires a more ambitious way of thinking about education as one which fosters creativity and innovation whilst retaining a commitment to critical analysis (UNESCO, 2002). The link also calls for an educational system which promotes a system of ethics and values sensitive to cultural identity, multicultural dialogue and democratic decision-making, and the appropriate use and management of natural resources (ibid).

In providing a holistic view of sustainable development, these four dimensions support four inter-related principles for sustainable living. Firstly, the holistic view supports the principle of conservation which ensures that natural systems can and will continue to provide life support systems for living things as well as the resources that sustain economic system. Secondly, it supports the principle relating to peace and equity and encourages people to live harmoniously together whilst having their basic needs satisfied in fair and equitable ways. Thirdly, the holistic view of SD supports the principle of appropriate development that ensures people can support themselves in a long-term way (which I interpret to mean the development of lifelong skills), whilst the fourth principle, democracy, ensures people have a fair and equal say over how natural, social and economic systems should be managed (UNESCO, 2002). I have used these four dimensions of sustainable development in my analysis where appropriate, in this thesis.

The view of sustainable development as a concept that emphasises the linkages and interdependencies of the social, political, environmental and economic dimensions of human capabilities by acknowledging relationships between humans and other species (UNESCO, 2002; Davis, 2015), is underpinned by critique of the ways humans use and share resources as global environmental problems such as those identified in Chapter One pose a threat everywhere on Earth; in addition to recognising

intergenerational equity issues (UNESCO, 2002; Pawłowski, 2008; Davis, 2015). Most importantly, and with regards to early childhood, the question on how the linkages among these dimensions can be achieved in early childhood education and care (ECEC) arises. For instance, it is understood that achieving sustainability through all the dimensions may prove difficult as emphasis has previously been on the natural (environmental) dimension (Davis, 2010). In view of this, Grindheim et al. (2019) whilst acknowledging the difficulties in research of achieving sustainability through emphasising all the mentioned dimensions, suggest that there is need to be aware that the holistic view of sustainability through the lens of the four dimensions – natural, social, economic and political – does not imply that ESD needs to address all dimensions at the same time. This means that education may focus on one or two dimensions, though not in irreconcilable conflict with the other dimensions.

The four dimensions of sustainable development are needed to bring sustainability in line with young children's everyday lives in ECEC (Grindheim et al., 2019). This is because the four dimensions can pave ways for the variety of content in ECEC settings such as playing in nature; learning about nature; gardening; composting; facilitating positive relations and social networks among children and early childhood education (ECE); among parents and ECE; and among places and humans to establish locally based trust. Hence, finding relevant activities to educate for sustainability is important for meeting the demands of the four dimensions (Grindheim et al., 2019).

In addition, the concept of sustainability recognises that there are ecological limits to growth which have been overreached, and while no one knows what living sustainably might look like, it is generally agreed that it is everyone's business and that education has an important role in its achievement by promoting a system of ethics and values sensitive to cultural identity, multicultural dialogue, democratic decision-making as well as appropriate use and management of natural resources (UNESCO, 2002, 2005; UN 2015b; Davis, 2010; McKeown, 2013).

2.2 Millennium Development / Sustainable Development Goals

The United Nations (2005) Millennium Development Goals (MDGs) (2000-2015) that comprised eight goals aimed to eradicate extreme poverty and hunger; combat illiteracy through universal primary education; combat diseases such as HIV/AIDS

and malaria, ensure environmental sustainability, amongst others, were still in force at the commencement of this study. The MDGs were adopted by world leaders in September 2000 to build upon a decade of major United Nations conferences and summits. They were specific and measurable and helped to drive progress in some priority areas of international development for 15 years like the reduction of extreme poverty, access to water and sanitation, reduction in child mortality and improved maternal health (United Nations Development Programme, 2018; Boyd, Hirst and Siraj-Blatchford, 2018).

Although some significant achievements were recorded for many of the MDG targets such as reduction in extreme poverty and increase in primary school net enrolment rate in developing regions of the world, it was clear that progress was uneven across regions and countries (UN, 2015). The world's poor remain overwhelmingly concentrated in some parts of the world, many women continue to die from pregnancy or from child-birth complications; whilst progress tended to bypass women and those lowest on the economic ladder; in addition to those who are disadvantaged due to age, disability or ethnicity (UN, 2015). Clearly, a new set of goals was needed to build on the successes of the MDGs by tackling the root causes of poverty through integrating all dimensions of sustainable development. Intent on "Transforming Our World: the 2030 Agenda for Sustainable Development", the United Nations General Assembly adopted a collection of 17 global goals (with 169 targets) known as sustainable development goals (SDGs). These SDGs are broad and interrelated, though each goal has differing targets to achieve. They cover a wide range of social and economic development issues as well as constitute a universal call to action to end poverty and hunger, support health and well-being, quality education, gender equality, water sanitation, climate action, to mention a few. They build on the principles agreed at the Rio+20 Conference in 2012, and aim to be action-oriented, concise, easy to communicate, limited in number, aspirational, global in nature as well as universally applicable to all countries, thus embodying a universally shared common global vision of progress towards creating a safe, just and sustainable space for all to thrive on Earth (Osborn, Cutter & Ullah, 2015). The goals reflect the moral principle that no one and no country should be left behind, with everyone having the responsibility of making their impact in actualising this vision. The SDGs apply to all countries whether developed or developing, both as ambitions and challenges. However, these different

goals and targets present different levels of challenge and ambition for different countries due to their national realities, capacities, current state of development and respect for national policies and priorities (ibid.). All the 17 goals of the SDGs interconnect in that success in one affects the success for others (UNDP, 2018). This can be seen, for instance, in the way a society tackles issues of climate change which in turn impacts on how its citizens begin to manage their fragile resources; or how the promotion of peaceful and inclusive societies can help reduce inequalities which will help economies to thrive (UNDP, 2018).

The SDGs are significant for early childhood as they signal early childhood development as a priority focus for the 21st century as explicitly stated in Target 4.2 that by 2030 countries should:

"Ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education"

The SDG commitments to early childhood development are broader than the highlighted education-focused target. The goal of strengthening early childhood development is key to achieving at least seven of the SDGs such as those that relate to areas such as poverty, hunger, health and well-being, quality early childhood education, reduction of gender inequality, water and sanitation, and inequality (Young Lives, 2016). As at the time of adoption of the SDGs in September 2015, there is recognition by the international community that education is a key instrument for achieving success in all 17 SDGs. To this end, Irina Bokova, UNESCO's Director-General stated that:

"*There is no more powerful transformative force than education – to promote human rights and dignity, to eradicate poverty and deepen sustainability, to build a better future for all, founded on equal rights and social justice, respect for cultural diversity, and international solidarity and shared responsibility, all of which are fundamental aspects of our common humanity*" (UNESCO, 2015b).

In addition, Irina Bokova was of the view that a fundamental change is needed in the way we think about education's role in global development *"because it has a catalytic impact on the well-being of individuals and the future of our planet … Now, more than ever, education has a responsibility to be in gear with 21st century challenges and*

aspirations and foster the right types of values and skills that will lead to sustainable and inclusive growth, and peaceful living together" (UNESCO, 2017:7).

As education is recognised as a basic human right and the foundation on which peace can be built, as well as the tool to drive sustainable development (UNESCO, 2017), its task as a driving force for the SDGs became the priority of the United Nations Educational, Scientific and Cultural Organisation (UNESCO). UNESCO is the United Nation's specialised agency for education, that is entrusted to lead and coordinate the Education 2030 Agenda, a part of the global movement to eradicate poverty through the 17 SDGs by 2030.

Currently, children and providers of quality early childhood education and care (ECEC) are regarded as important stakeholders in achieving sustainable development as emphasised in the recent report on the United Nations Sustainable Development Goals (SDGs) for 2016-2030 (UN, 2017) where it was revealed that lack of trained teachers and the poor condition of schools in some regions like sub-Saharan Africa, are jeopardising the goal of quality education for all. To this end, the Global Action Programme (GAP) on ESD, the follow-up programme to the UN Decade of Education for Sustainable Development (UNESCO, 2016) has as one of its Priority Action Areas the task of building capacities of educators and trainers in terms of their acquiring the necessary skills, values, motivation and commitment to introduce ESD into their teaching, and also because they are viewed as powerful agents of change in the educational response to sustainable development (UNESCO, 2018).

2.3 Education for sustainable development

The increased understanding of the scale, severity and interlocking nature of issues of humanity's unsustainable practices, led to expectations from governments and their citizens that schools and other institutions of social learning should help prepare young people to respond positively to opportunities offered by wide public understanding of and support for sustainable development (UNESCO, 2002). Education has enormous potentials for sustainable development in raising awareness over unsustainable practices as well as increase our capacity to confront and master change. In this way, it is expected that education will not only inform, but change (transform) people's attitudes and behaviours. Even though it is seen as a means for personal enlightenment

and cultural renewal, education is not only central to sustainable development, but is believed to be humanity's best hope and most effective means in the quest to achieve sustainable development (UNESCO, 2002).

Education for sustainable development (ESD) is explicitly recognised as part of SDG 4 with the aim to:

"Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all".

ESD is education that supports learners to develop attitudes, skills, capacities, values and the acquisition of knowledge which enables them make decisions based on benefits to themselves and others, both for now and in the future, as well as put those decisions into practice (McKeown, 2002; UNESCO, 2005). It is education that has the capability of fostering responsible citizens through democratic participation in matters that affect them, thus empowering learners to contribute to a sustainable world for everyone, current and future generations (UNESCO, 2005; Laurie et al, 2016). On this note, SDG 4.7 focuses on education and global citizenship education as a complementary approach:

"*By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development*" (United Nations, 2015a).

The view that education for sustainable development has its origin in environmental education (Davis, 2010) is re-echoed by Pramling Samuelsson & Siraj-Blatchford (2014) who suggest that ESD in pre-primary curriculum may be fundamental to the established principles of early childhood education identified in the educational writings of Jean-Jacques Rousseau, Robert Owen, Froebel and John Dewey. Pramling Samuelsson & Siraj-Blatchford (2014) specifically referred to Froebel's (1826) contention that pupils are able to get clearest insights into the character of things, nature and surroundings when studied in their natural connection, and this aligns with UNESCO's vision to provide an education that not only matters, but also one that is

truly relevant to every learner in the light of challenges they face on a day-to-day basis (UNESCO, 2017).

Environmental education can be traced to its early manifestations as an outdoor, science-based education, to education with greater emphasis on interactions between people and environments (Davis, 2010). The author also suggests that a still popular and useful conception of environmental education which was developed in the 1990s is that which refers to:

- Education in, through or from the environment that provides direct environmental (usually outdoor) experiences and field knowledge and skills;
- Education about the environment that focuses on understanding concepts and knowledge related to environmental processes and issues;
- Education for the environment that develops values and skills – as well as knowledge and processes – aimed at learners making informed judgements, participating in decision-making and taking action on environment-related issues (Davis, 2010).

This three-part conception has evolved into what is now referred to as education for sustainability (EfS in Australasia) or education for sustainable development (ESD, mainly in Europe) in the 21st century. This conception of EfS or ESD takes a more global and holistic view of issues with opportunities for learners to be actively involved and participate in real community problem-solving, and having characteristics which include: interdisciplinary, democratic and inclusive social processes, active learning, critical thinking and problem solving, having a futures-orientation, forging community connections, and taking action (Davis, 2010). For the purposes of this study, I used the terms education for sustainable development (ESD) and education for sustainability interchangeably. For better understanding of sustainable development, I provide a summary of some conferences and initiatives that have helped to shape present global actions on issues of sustainability in the next section.

2.4 ESD in early childhood education and care

Recent global interest in ESD traceable to the growing awareness of significant threats to present and future well-being, makes it necessary for 21st century societies to adopt a transformative shift towards sustainability in all spheres of life, and this holds true for early childhood education (Pramling Samuelsson & Kaga, 2008). The early years is the first and most influential stage of a child's learning life course, and this makes young children important actors for sustainable development (Engle et al., 2007; Engdahl, 2015). For these reasons, Croft (2017) and Ärlemalm-Hagsér & Pramling Samuelsson (2018) argued for the need to equip educators' capacities in ESD and for ESD to move forward through systematic integration into national and educational policies, steering policy documents and curriculum (McKeown, 2002). This integration should not be viewed as a vehicle for implementing what is deemed to be the right values/ knowledge, but as a necessary challenge to how ECEC is practised in actual pedagogical contexts in the current era of uncertainty, instability and rapid change. These arguments have led to my need to explore how education for sustainable development is practised in an early years setting.

Transformative learning, especially with regards to children, is deemed a vital component of a sustainable program as it encourages problem-solving and critical thinking about issues such as global warming which will directly affect their lives – both now and the future (Young, 2007). Sharing this information with children is important in providing them with opportunities to learn how their actions impact on the health of the planet, and failure to do this would be deemed as irresponsible on the part of adults (Young, 2007). In addition, research evidence has recognised children as having the right, as well as a responsibility, to be educated for sustainable development, and that it is in the early years that children have the greatest capacity to learn and develop many of their fundamental attitudes and values (Didonet, 2008; Davis, 2009; European Panel for Sustainable Development (EPSD), 2010; Pramling Samuelsson, 2011; Pramling-Samuelsson and Siraj-Blatchford, 2014).

It is therefore important that the study of nature and the interdependence between human beings and the environment is incorporated in early childhood curriculum, as whatever is deeply lived, practised and felt in the early years of human development remains for the rest of one's life (Didonet, 2008). Living sustainably develops a deep

connection with plants, animals, people and the earth itself and acknowledges that humans are an inseparable part of the web of life (Young, 2007). This kind of lifelong learning will help to develop respect for all life forms as well as the systems that nourish them. Children's receptiveness and willingness to learn and develop attitudes and values must be taken advantage of in early childhood education (Pramling Samuelsson, 2011), and the United Nations Sustainable Development Goals (SDGs) can help foster children's developmental potentials (Siraj-Blatchford et al., 2015, 2016; Britto, 2015). However, it is evident that change is slow: the focus has been on environmental education to the detriment of environmental/sustainability issues with little attention paid to young children in educational settings (Davis, 2009; Siraj-Blatchford et al., 2010; EPSD, 2010; UNESCO, 2014; Sommerville & Williams, 2015). Consequently, the field of early childhood ESD is under-researched and needs to be remedied to build the field on an evidence base of critique, reflection and creativity (Siraj-Blatchford et al., 2010).

Recommendations from some major international organisations have enhanced the profile in the field of ESD by re-focusing it on the intertwined global environmental, social and economic issues (Somerville & Williams, 2015). UNESCO acted as a catalyst for re-focusing the profile of ESD in early childhood through two key international workshops in 2007 and 2008 which led respectively to the first-ever ESD international reports: *The Contribution of Early Childhood Education for a Sustainable Society* and *The Gothenburg Recommendations on Education for Sustainable Development*, that recognise early childhood as a natural starting point for ESD (UNESCO, 2014). In addition, the Organisation Mondiale Pour l'Education Prescolaire (OMEP), the World Organisation for Early Childhood Education, established various international development projects which provide guidance for practitioners on how to work with children to promote ESD (Siraj-Blatchford & Huggins, 2015).

To gain a better understanding of sustainable development, we now look at the Earth Charter and its child-friendly version, the Little Earth Charter.

2.5 The Earth Charter

The Earth Charter (2000) is another way of capturing the ideas and ideals of sustainable development. Amidst the great diversity of cultures and life forms, ESD recognises that all people belong to one human family and one Earth community with a common destiny (UNESCO, 2010a). This realisation consequently leads to the responsibility to adopt an ethic of living sustainably based on principles of equity, respect for human rights, economic justice as well as the cultivation of peace and mutual understanding (UNESCO, 2010a). The Earth Charter seeks to inspire a sense of global interdependence and shared responsibility for the well-being of the human family, the greater community of life as well as future generations. It is a vision of hope and a call to action, as well as an important influence on the Plan of Implementation for the UNESCO Decade of Education on Sustainable Development (see earthcharter.org).

Despite being the most inclusive, participatory and transparent process ever associated with the creation of an international declaration, the status of the Earth Charter is only Soft Law document, as it is neither strictly enforceable nor completely lacking legal significance. Its principles are a set of morally, but not legally, binding agreements on codes of conduct which countries, governments and organisations have agreed to endorse and adopt (Engels, 2005; Bernstein, 2007). To be enforceable, this needs to become a hard law treaty (Rockefeller, 2007). I find the Earth Charter useful as a valuable educational document that enables us to examine our current values regarding the environment and make major changes to the way we think and live for a sustainable present and future (see earthcharter.org).

The Earth Charter is divided into four sections (called pillars) and sixteen principles. The four pillars namely: respect and care for the community of life; ecological integrity; social and economic justice; and democracy, non-violence and peace, represent the four dimensions of sustainable development, with principles which include: respect Earth and life in all its diversity; build democratic societies that are just, participatory, sustainable and peaceful; integrate into formal education and lifelong learning the knowledge, values and skills needed for a sustainable way of life, to mention a few (see earthcharter.org). I find the Earth Charter useful as a valuable educational document that enables us to examine our current values regarding the environment and make major changes to the way we think and live for a sustainable

present and future (see earthcharter.org). Its child-friendly version, the Little Earth Charter, is a useful resource to nursery settings. So, we will now look at it in detail.

2.5.1 The Little Earth Charter

The Little Earth Charter (2009) is an animated audio-visual educational programme made through a collaboration between J.C. Little of Little Animation Inc. and Rosie Emery, a singer, songwriter and environmental educator, with the aim of supporting educators to convey or integrate the Earth Charter's universal and environmental values into children's consciousness so that they can grow into responsible earth stewards for a sustainable future.

The Little Earth Charter contains eight universal principles which include: Life - which means respecting and caring for all living things, no matter how big or small; Interconnectedness - which means that everything is connected to everything else and we all need each other; Family - which means treating everyone well; Past – which means learning from all people who have lived before us and being inspired by their gifts of wisdom; Earth – which means taking care of the Earth and all its resources; Peace – which means living in peace and cooperating with others to resolve conflicts in non-violent ways; Love – which means the promise to be truthful and kind to others, building trust and taking responsibility for our actions (this translates into care in this thesis); and Future – the promise to do everything possible to ensure that everyone now and in the future will be able to live together in health, peace and harmony on planet Earth (see littleearthcharter.org).

These listed principles are fundamental to ESD as they convey vital information to children about positive values and attitudes needed for a sustainable world, both for now and the future. They are consistent with the aims of early childhood education for sustainability and include learning to be compassionate; having respect and appreciation for diversity; equality and fairness; engaging in intellectual dialogues on sustainability; and adhering to democratic values and practices (Pramling Samuelsson & Kaga, 2008). However, in this study, I focus on the first Principle of Life, as I am motivated to raise children's awareness on the need to respect all life forms, care for the environment, and create a peaceful and harmonious society. To me, the Principle

of Life aptly captures the essence of sustainable development for the age group that I worked with in the project.

2.6 Context for the study in England

To contextualise my study, I provide a summary of the current early childhood education and care (ECEC) provision in England. I then discuss the need to embed ESD into ECEC curricula, in the light of England's early childhood education curriculum, the Statutory Framework for the Early Years Foundation Stage (DfE, 2017).

2.6.1 Early childhood education and care provision in England

Early childhood education and care provision in England covers a wide range of formal and informal services (OECD, 2015). Formal provision includes different forms of nurseries such as privately-run day nurseries, nursery schools and reception classes within primary schools as well as settings outside the state sector such as voluntary pre-schools, playgroups, children or family centres and childminders, whilst many children are informally looked after by grandparents, friends, neighbours, nannies or other home carers (DfE, 2013; OECD, 2015; Eurydice, 2019). Historically, and in marked contrast to the compulsory school system, public funding of early years provision in England has been patchy with a clear divide between nursery education and childcare (West, 2006; West & Noden, 2016). The 1918 Education Act empowered local authorities to apply for grants to assist with funding nursery education if they desired such provisions; and this further led to the expansion of nursery education as a result of widespread employment of women during the World War II. Indeed, this required local education authorities to have regard to the need to secure nursery schools or classes provision for children under 5 years of age. This provision also varied within the country with a clean north-south divide (West & Noden, 2016).

Despite a move to provide universal nursery education through the 1972 White Paper: "Education, a Framework for Expansion", little progress was made in this regard due to the country's financial crisis in 1976. The 1980 Education Act clarified earlier legislation by stating that a local education authority had the power, but not the duty,

to establish, maintain or assist nursery schools or schools with nursery classes. A nursery voucher scheme for four-year-olds was introduced in 1996 enabling parents to access places in maintained nursery schools, nursery/reception classes in primary schools or in the private, voluntary or independent sectors. The Labour Government on coming to power in 1997 instigated entitlement to free part-time nursery education provision for all four-year-olds instead. This free place comprised a minimum of five two-and-a half hour sessions a week (12.5 hours) for 33 weeks of the year, an offer that was extended to all three-year-olds in 2004 with hours increased to 38 weeks, and finally increased to 15 hours a week under the Coalition Government between 2010 and 2015. Currently, parents of three-to-four-year-old children across England are able to claim up to 30 hours of free childcare a week from 1st September 2017 if it is provided by registered childminders, playscheme, nursery or club; childminders with an Office for Standards in Education (Ofsted) registered childminding agency; registered schools; or home careworker working for a registered care agency (Gov.uk, 2018). This free childcare provision ends when a child reaches compulsory school age.

The United Kingdom government focused on early years development but not on sustainability in the early years. Yet, significant efforts are made to develop this in schools and within higher education (UNESCO, 2014; Boyd, McNeill & Hirst, 2017). Emphasis on ESD has faded under the Coalition government in 2010, leaving educators and practitioners uncertain about how much emphasis to place on sustainability within teaching and learning (UK National Commission for UNESCO, 2013).

2.6.2 Embedding ESD into UK ECEC curricula

At a global level, efforts are being made to embed ESD into ECEC curricula. Whilst some national governments in countries like Finland and Singapore emphasise environmental education content in their early childhood education curricula, which make provision for environmental activities, including those which focus on the social and physical world, governments in Australia and Sweden also emphasise environmental education in their ECE curricula, with focus on concepts like critical thinking, children as active participants for change, but with limited reference to sustainability. Strong support to ESD is, nevertheless, evidenced in the early childhood

education curricula in countries like Korea and Norway (Siraj-Blatchford & Pramling-Samuelsson, 2016).

England's revised Statutory Framework for the Early Years Foundation Stage (DfE, 2017) provides the national statutory guidance for fostering children's learning and development from birth to 5 years, as well as the work with their educators. One of the four principles of this guidance is to provide enabling environments for children which play a key role in supporting and extending their development and investigation (DCSF 2007; DfE, 2012). Even though there is constant reference to the word 'environment' to generally describe the premises and equipment of early childhood settings, there is no specific mention of the word 'sustainability' in the EYFS (Gilbert, Rose & Luff, 2015; Boyd, Hirst & Siraj-Blatchford, 2018). There is an underlying commitment to supportive relationships (evidenced by partnerships with parents and the requirement of a key person for every child), nurturing experiences and enabling environments that support children's curiosity and enthusiasm for learning in the EYFS. These factors evidence key principles of ESD and provide powerful structures upon which an ESD curriculum might be developed (Gilbert, Rose & Luff, 2015; Siraj-Blatchford, 2016; Boyd, McNeill & Hirst, 2017).

Based on these submissions, there is need for a re-orientation of England's early childhood content and pedagogy in the direction of ESD to enable it to be embedded in its early childhood care and education (ECCE) curriculum and practices (McKeown, 2002). Early childhood practitioners should embrace holistic approaches that explore all aspects of sustainable development through activities which provide opportunities for discussing the need for such practices. Deeper learning will encourage and support children to become critical thinkers to widen their understandings of the impact our actions have on the planet (McKeown, 2002, 2013; UNESCO, 2017b).

The global requirement for educators is to underpin all their work with the concerns as well as the principles of ESD (Huggins & Evans, 2018). To carry out this task effectively, educators of young children need to widen their considerations of ESD as it is widely believed that an educator's pedagogical content knowledge of a concept or topic is essential for effective teaching and learning of that concept/topic (Sund & Wickman, 2008). This need for educators to have pedagogical content knowledge

aligns with directions in policy and practice in England, as early childhood educators are required to have appropriate qualifications, training, skills and knowledge that will enable them to provide quality learning and development experiences for children in settings (DfE, 2011, 2017).

Teaching and learning for sustainability in the UK has centred on the environmental aspects where focus has been solely on provision of environmental activities, especially through projects that emphasise recycling and gardening (such as SEEd and the Sustainable Schools Alliance) that encourage schools to put sustainability at the heart of their thinking. Other initiatives are the Forest School experience and other similar initiatives, including Learning Outside the Classroom initiative (DfES, 2006), and Learning through Landscapes (ltl.org.uk) that have provided enormous educational benefits. Currently, approaches to sustainability are those that focus on the three broader dimensions of ESD – economic, social and political, and challenging educators' responses to change from merely teaching children about environmental issues to approaches which help to direct children's thinking to act for change (Hedefalk, Almqvist & Östman, 2015).

Despite these innovative projects and programmes associated with early childhood ESD in England, there has been no sustained policy commitment to sustainability as an important aspect of young children's learning and development (Barratt et al., 2014). This is despite the country's rich heritage of providing outdoor nature experiences for young children, as well as UNESCO's (2002) requirement for the broader process of social change (social learning) or enhancing societal capacity for the environment (UNESCO, 2002) that involves the use of policy and legislation in addition to specific education and training programmes to be used as opportunities for teaching and encouraging new ways of personal, societal and corporate behaviour. It is also acknowledged that all those who partake in this process require a profound transformation in their ways of thinking and acting to enable them to engage with sustainability-related issues as described in the SDGs. They will also be able to develop knowledge, skills, values and attitudes that will empower them to make meaningful contributions to sustainable development, such as by taking "informed decisions and responsible actions for environmental integrity, economic viability and a just society for present and future generations" (UNESCO, 2017a:7, 2017b). Based

on these concerns, this study aims to explore how children's and practitioners' knowledge, values, attitudes, skills and practices of sustainability can be understood and promoted within an early childhood setting in England.

2.7 My personal understanding of sustainable development

Personally, and for the purposes of this study, I hold sustainable development to be the cultivation of positive attitudes, skills, values and practices that have the capability to foster peaceful and harmonious co-existence between humans and non-human organisms and the environment. It also needs to rest on behaviour that is based on love, understanding, trust as well as fairness as these qualities are those that can help to make the world a better place for all to live in. When all these qualities are present, we will be able to listen and empathise with others and lend a hand to make things better. It is these commitments that my study rests upon.

Finally, in my narratives and descriptions of events in this thesis, I refer to myself as 'I', 'my' and 'myself'. When narratives relate to actions which involve collaboration between myself and the practitioners, I use the term 'team'. Finally, when narratives relate to myself, children and practitioners, I use the term 'participants.'

2.8 Summary

In this chapter, I have provided the contextual information for this study and focused on some key aspects of sustainable development such as the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs); the Earth Charter and Little Earth Charter, whilst showing their relevance to the study. I also provided information on key global conferences and initiatives on sustainable development that have paved the way for the global awareness and growth of sustainable development initiatives.

I also provided contextual information on early childhood education and care provisions in England to justify the need for this study as the country's early childhood curriculum, the Early Years Foundation Stage, is 'silent' on sustainability. The contextual information has shown how an important concept like sustainability is significant for everyone, especially the need for it to start from the early years.

In the next chapter (Three), I will present a review of existing literature from across the globe which form the basis of this study. The review explores studies on education for sustainable development and environmental education.

Chapter Three: Literature review

In this chapter, I critically explore literature on the topic of education for sustainable development (ESD) in the early years focusing especially on discussion papers and studies carried out by notable authors in the research field: Julie Davis, Ingrid Pramling-Samuelsson, Eva Ärlemalm-Hagsér, Susan Edwards and John Siraj-Blatchford, amongst others. Much of the reviewed literature covers studies carried out in Australia, New Zealand and Nordic countries like Norway and Sweden, that are noted for their significant research on early childhood education for sustainable development and environmental education. Other works refer to England and other countries like Iceland, Turkey, China and Cameroon in Africa.

As I stated at the outset (see Chapter One), my literature search was informed by the reviews of literature in the field of early childhood education for sustainability. I focused mainly on educational databases such as ERIC, the Education database (ProQuest), Education Research Complete (EBSCO), JSTOR and Gale Cengage, amongst others, to research peer reviewed journals and articles that focus on research in the field of early childhood education for sustainability. In my search, I used keywords such as 'early childhood', 'education for sustainable development', 'education for sustainability' and 'environmental education'. This search led me to journals such as *Early Education*; *Early Child Development and Care*; *International Journal of Early Years Education*; *International Journal of Early Childhood*; *Environmental Research*; *Environmental Education Research*; and *Australian Journal of Environmental Education*; where I was able to scan abstracts of articles that focus on early childhood education and care for sustainability and nature/outdoor play and young children. My review of these articles showed that most of them reported on studies that were conducted with young children in preschools (or kindergartens) and in schools, whilst some of them focused on studies that were conducted with early years practitioners or pre-school service teachers and addressed environmental or sustainability education. Based on this development, I have identified 31 studies that have influenced my decision-making in this project, and they are summarised in the table in Appendix 2.

Reviewing these earlier studies enabled me to gain insights and understandings into the topic of ESD and appropriate methodological approaches. In addition, they

highlighted some vital theoretical perspectives from which they were carried out, providing insights to support the theoretical framework that I have adopted for my study.

This review of literature also enabled me to identify some current challenges and issues in early childhood education for sustainability policy, practice and research raising questions that need to be answered, thereby paving the way for this study as well as the research process. The review also led me to identify eleven (11) key themes which highlight approaches that address sustainability issues and which practitioners need to consider when planning and implementing practical activities with children that support ESD. I have presented the literature review under these eleven key themes which I found to be repeatedly present in the studies. The discussions of each theme vary considerably in length, but this is not a reflection of value that I place on each of them, and where appropriate, these themes are considered at the later analytical stages.

I start with themes about play as this is really significant for both this thesis and for early childhood education. Play is widely recognised and validated as a key characteristic of effective practice in early childhood education (Wood, 2010). It is viewed as a compelling activity that promotes children's cognitive, physical, social and emotional well-being, especially in the development of their communication and collaborative skills (Siraj-Blatchford, 2009; Bento & Dias, 2017). It provides opportunities for children to explore and construct new knowledge as they experiment, solve problems, think creatively and cooperate with others (Bento & Dias, 2017; Lino & Parente, 2018). Based on these claims, I hold play to be the best way to present a concept as daunting as sustainable development to children as young as those in this study.

3.1 Pedagogical play

Play is understood to be context-specific and personally subjective and this enables practitioners in ECEC settings to adopt a range of approaches to meet children's diverse learning needs. The concept of pedagogical play involves practitioners' consideration of different forms of play or play activities that can inform the early childhood curriculum and contribute to children's capacities to engage in meaning making and develop understandings of their worlds (Wood, 2010). It deliberately

focuses on the role of the teacher during children's play as it seeks to achieve a balance between child-centred and teacher focused activity (Epstein, 2007; Barnes, 2012). Play within the concept is positioned along a continuum having freely chosen and open-ended play towards the left of the continuum and 'non-play' or teacher-directed activity towards the right of the continuum (Wood & Attfield, 2005). In this regard, pedagogical play is viewed as a response to research challenging the assumption that children can construct conceptual knowledge through freely chosen open-ended play (Edwards & Cutter-Mckenzie, 2013).

In my focus on play in its application for teaching and learning for sustainability in this study, I subscribe to Wood's (2010) interpretation of what play *means* for children in that play derives from an 'inside-out' perspective which privileges children's cultural practices, meanings and purposes. Hence, play provision is viewed as an emergent-responsive approach where adult-and child-initiated activities are integrated through curriculum planning, assessment and feedback. Integrated approaches foster dynamic interactions between people, resources and activities in an educational setting, and leads to teaching and learning becoming co-constructive as adults become involved with planning for play and child-initiated activities based on their observations during interactions. Hence, adults' pedagogical planning and decision-making for play is informed by children's interests, choices, capabilities and knowledge, which are used to feed forward for further curriculum planning. It is therefore necessary for practitioners to develop integrated pedagogies informed by 'inside-out' perspectives which take into consideration their understandings of the inherent qualities and characteristics of play; what play means for children as well as the complexities of their roles as adults in children's play (Wood, 2010). In addition, since practitioners are required to consider the complexities of their roles in children's play, especially in considering diverse types of play to use as basis for teaching and learning for sustainability, it becomes important to acknowledge and appreciate the experiences, knowledge, values and actions that teachers of young children bring into educational settings (Pramling Samuelsson & Park, 2017).

In considering the pedagogical strategies for teaching concepts of biodiversity as an aspect of sustainability education in early childhood, the Australian project by Edwards & Cutter-Mackenzie (2013) examined how three different types of play-based pedagogy: open-ended, modelled and purposefully framed play, prompt teacher

planning for children's learning about biodiversity. Teachers chose specific aspects of biodiversity around which they developed relevant play experiences for children with opportunities to reflect on the pedagogical strategies used in their teaching. Findings showed purposefully framed play as the type most likely to prompt teachers to identify specific biodiversity concepts and associated pedagogical strategies. Modelled play was partly successful, whilst open-ended play was the least successful. Teachers' existing interests in sustainability coupled with initial professional learning session (Pramling Samuelsson & Park, 2017) enabled them to realise the goals of the project. This was in addition to aligning play activities with children's current interests that provided opportunities for reflections, social interactions as well as resources to support their learning (Sylva et al., 2004).

The project's conclusion that pedagogical strategies associated with each type of play could be combined during play to build on each other and form a structure, enabling children to build a continuous depth of knowledge and understandings of concepts through discussions, highlight the role of teacher planning before play. However, findings from a Swedish study by Ärlemalm-Hagsér (2013a) showed that purposefully-framed play failed to achieve its aim of children's learning for sustainability in a theme about Earth Hour (energy conservation) when the intended knowledge content within it faded into the background when other topics were brought up by the children. This finding shows the need for practitioners' pedagogical content knowledge and collaborative planning on energy conservation to enable more effective presentation of the topic to the children prior to watching a film on earth from outer space. This is in addition to a need to explore how communicative action, participation, listening, content knowledge and play can be intertwined in planning for purposefully framed play experiences for children.

The educator's role in delivering successful purposefully framed play was highlighted in a three-week project by Luff, Miles & Wangui (2015) in England and Kenya. The project encouraged positive dispositions towards bat conservation and was interspersed with a variety of activities and play-based tasks in connection with the EYFS Learning and Development areas. Practitioners involved in the project learned alongside the children, hence making a case for co-construction of knowledge as a model for practical and investigative approach that could prove fruitful for early years professional development for ESD. Early years practitioners were also encouraged to

embrace ESD and incorporate it into their work with children and families. From this study, I developed an understanding of ways of working with participants that enables co-construction of knowledge through collaboration with one another during the study.

To fill the gap in research regarding the highlighted issues, I have focused on practitioners' content knowledge and collaborative planning for children's play in this study as I concur to the view that open-ended play alone might not be enough for supporting children's learning for sustainability (Hedges & Cullen, 2005; Langford, 2010; Nutbrown, 2018). Based on this view, purposefully framed play should be built into the early years curriculum to create more opportunities for teachers and children to be engaged in play through intensive discussions to pave way for 'sustained shared thinking', a process that occurs when two or more individuals work together in an intellectual way to either solve a problem, clarify a concept, evaluate an activity or extend a narrative (Sylva et al., 2004a:5, 2004b; Siraj-Blatchford, 2009).

3.2 Play in nature

One of the main tasks of education for sustainable development for young children is to foster their genuine interest in nature, the environment and natural science, in addition to laying a foundation for a democratic approach (Pramling Samuelsson, 2011). This comment suggests that educators need to be mindful of family influences on children's attitudes and values that may sometimes contradict the aims of nature play as was observed in the study by Fägerstam (2012). Teachers in the study acknowledged the role of the family in introducing children to the natural world but noted their influence in transferring their fears of animals and organisms leading to children's general sense of detachment from nature. Early childhood practitioners need to engage children playfully while demonstrating an appreciation of the natural and social world, and help them nurture a sense of compassionate connection, positive relationships and civic capacity such as cooperation through enhanced bonding with others in social interactions (Elliot and Davis, 2004; Blair, 2009; Ritchie, Dunn, Rao & Craw, 2010; Wilson, 2012; Warwick, Warwick & Nash, 2018). These suggestions align with the generally agreed notion that children are more likely to become environmental stewards later in life if they have had direct interaction with nature and grasp that they are part of an interconnected link within the natural world (Chawla,

2006; Blair, 2009; Young & Moore, 2010; Brook, 2010; Andrejewski, Mowen & Kerstetter, 2011; Fisher-Maltese, 2016). In this way, children's engagement in caring for the natural environment will enable them to gain a sense of pride and respect for their environment through gaining skills knowledge and the desire to care for it in the future (Ritchie et al., 2010). Blair (2009) and Young & Moore (2010) assert that the outdoor also provides opportunities for first-hand experiences of a variety of species, habitats and ecosystems (Wilson, 2012). Children and all those who experience it gain awareness that nature is interconnected through experiencing a variety of plants and animals (biodiversity) and the ways in which they interrelate (ecosystems) within the physical environment (Young & Moore, 2010). They also learn that nature is not something they can own, but that they are a part of, and not above the environment (Ritchie et al., 2010).

Re-echoing the stance of some foundational educational models of learning that support a return to closer linkages with the natural environment, Wilson (2012) claimed that young children and nature both grow better when carefully nurtured, and both engender a sense of joy and excitement because they have much in common. Froebel (the founder of the kindergarten movement) supported experiential play in nature for children's development that highlights the need for early childhood practitioners to carefully plan for and implement children's outdoor and indoor activities (Tovey, 2013; Wilson, 2012, Haas & Ashman, 2014). To achieve this goal, Tovey (2013) proposed that practitioners should focus on children's interactions with the natural world through activities like planting and watering seeds, as well as engaging them in frequent nature walks to foster child-teacher exploration of the natural world.

The Reggio Emilia approach, another educational model that links children and their environment, has as one of its guiding principles, the view that the environment serves as a child's 'third teacher' (Rinaldi, 2006; Haas & Ashman, 2014; Starbuck, Olthof & Midden, 2014). In this model, both the indoor and outdoor environments are carefully planned with children being supported to spend long, uninterrupted periods in the outdoors to foster child-directed explorations and play (Wilson, 2012).

Other educational theorists such as Dewey, Rousseau and Montessori also contend that children learn best through experiential play when allowed to actively explore their

environment (Haas & Ashman, 2014). The contention by Dewey that this opportunity was not always possible for school children due to schools being fragmentary and artificial as they are not based on natural contexts, makes it detrimental to children's ability to understand systems and processes (ibid.). This view is evident in current discussions on children's disconnectedness from nature such as those by Louv (2008), an American investigative journalist, who claimed that children in such contexts become apart from nature instead of being a part of nature, as they come to learn that nature is something "to watch, to wear, to consume, to ignore" and nature has become more of an abstraction than reality for the new generation (p.2). The appeal by Louv (2008) for children to be saved from this nature-deficit disorder calls for the need to provide them with unstructured opportunities for play in natural environments where they can learn about themselves and the world through curiosity and imaginations aroused by the beauty of their environments (McClain & Vandermaas-Peeler, 2016).

Ritchie et al. (2010) and Wilson (2012) also argued that early childhood settings need to be nurturing grounds for children to develop their sense of awe and wonder, actively experiment their life worlds to satisfy their innate curiosity, as well as afford them opportunities to reflect upon the consequences of their experimentation (Luff, 2018a). Learning through play and active exploration of their environments supports children's processes of knowledge construction that is rooted within specific social, cultural and ecological contexts, thereby providing a basis for education for sustainability in the 21st century (Wilson, 2012, Luff, 2018b). Dewey's ideals that provide inspiration for early childhood educators in the aspects of teaching pedagogies based on observing children's interests and sharing experiences in practical social activities, have provided useful insights into how I have conducted my study as I focused on practitioners (working collaboratively with me) as facilitators of dynamic interactions between learners and their experiences that have fostered individual growth and enabled possibilities for implementing education for sustainability in the nursery setting.

The need to renew children's contact with nature led to the adoption of the wildlife gardening project as a basis for all participants' learning for sustainable development in this study. The wildlife gardening project was shaped to provide learning opportunities within the Early Years Foundation Stage curriculum and so children had the opportunity to opt into the activity as one of a variety of possibilities on offer to them at the nursery. Gardening is an essential component of human well-being in

addition to its being an outlet for children to renew contact with nature (Brook, 2010) as children in the study were supported in experiencing closely the flora and fauna in their local context, and understand that nature is real – that it can be touched, drawn or photographed, studied over a period of time and supported through creativity and imagination (Starbuck, Olthof & Midden, 2014, Kiewra & Veselack, 2016). In addition, children will be able to experience features of nature such as time, wonder, action and freedom, that can operate as metaphorical gateways to enriched adult experiences, and which have the potential, especially in adulthood, to translate into politically transformative action as they develop a more empathic view of nature and learn to love and respect the Earth and become environmental stewards (Blair, 2009; Brook, 2010; Wilson, 2012; Fisher-Maltese, 2016).

Whilst play in nature is fundamental to young children's learning, Elliot (2015) argued that it is not enough in the teaching and learning for early childhood education for sustainable development. Though significant, she argued that it is one aspect of a holistic approach to relationships and drew attention to the need for early childhood educators to embed nature into children's play environments. In this way, practitioners will be able to share their own enthusiasm and wonder about the natural world with children to help to lay a foundation for sustainable living.

Elliot's (2015) suggestion echoes findings from the earlier work of Prince (2010) where ESD was examined from the viewpoint of children's connectedness with nature and focused on how ESD could be integrated into the Te Whāriki, the New Zealand national early childhood curriculum. The two-phase study took place in two early childhood centres for a period of one year. The first phase consisted of a two-week integrated curriculum implemented by teachers in each centre and involved environmental learning experiences integrated into core curriculum areas. The integrated curriculum comprised of learning experiences and excursions based on children's environmental interests (such as in sea creatures) and other shared interests (like wormeries and recycling). In addition, interviews with children and parents were conducted before and after the education integrated curriculum at both centres and narrative observations of focus children were recorded by researcher. The second phase was a teacher-led participatory action research, with continuous documentation of the project approach to environmental education and the emergent curriculum,

observations of focus children, conversations and interviews with teachers and parents recorded as field notes by the researcher, all of which were analysed.

The study managed to embed environmental education within the curriculum and foster participants' connectedness with nature. Parent participants' knowledge about some specific sustainable practices became evident: such as pollution linked with use of disposable nappies; exploitation of natural resources; the need for conservation, and the exploitation of whales for human use, became evident when referring to the natural environment. Teachers' knowledge about sustainability was demonstrated in their references to pollution and over-fishing (gained from the media), as well as their understandings of the unity of humans and the planet Earth. Similarly, children's knowledge of sustainability emerged through their discussions about the protection of birdlife, pollution and the need for conservation, were made possible through an excursion to an aquarium. Overall, the study highlighted a transformation of participants' attitudes and learning about the environment and sustainable practices that had the aim of educating them for harmonious living on Earth (Davis and Elliot, 2003), thereby supporting Prince's claim for changes to be made to the early childhood curriculum to include an integrated approach to education for sustainable development. I also draw attention to issues of teachers' and parent participants' knowledge about sustainability contributed to the effectiveness of the study as it can be inferred that they shared experiences about sustainability with the children during the study.

Similarly, the study by Ogelman (2012) reported the results of a project called "Learning about soil with Tipitop and his friends" in a Turkish preschool, aimed at introducing soil and concepts related to soil conservation to children aged 5-6 years. Erosion is one of the oldest and serious environmental problems in Turkey, and this makes the topic one that is 'rooted in the local concrete reality' of the children (Pramling Samuelsson & Kaga, 2008: 12). The study, based on experiential learning, comprised 29 indoor and outdoor activities in a 10-day pilot programme and parental engagement was encouraged. The experimental nature of the study necessitated grouping children into both an experimental and a control group. Pre-test, pilot activities, program application, post-test and follow-up applications for each group lasted 19 days. Results from the project justified all hypotheses as they revealed that the soil-related knowledge scores of children in the experimental group increased in a

statistically significant way compared to those in the control group. As the children gained more knowledge about the soil, their teachers also gained experience regarding teaching methods for soil education, that is, professional development in sustainable development; and parents gained experience regarding activities they can carry out with their children. I am of the view that results from the study regarding children in the experimental group show evidence of purposeful planning that enabled both children and their teachers to gain better knowledge about soil education, as well as providing teachers with confidence about appropriate teaching methods. Based on these findings, purposeful planning became one of the considerations for this study in my approach to the research process.

The study by Haas & Ashman (2014) also demonstrated the process whereby nature play was incorporated into a kindergarten program in a middle-class suburb in Hobart, Tasmania. Teachers facilitated weekly or fortnightly two-hour-long excursions to two natural bushland reserves near the school for 25 kindergarten school children and parent volunteers throughout the year. The choice of bushland as an ideal, authentic, natural environment offered children opportunities to engage in experiential learning through digging in sand, dirt and mud; climbing and tunneling; and searching for insects and other creatures under barks, rocks and logs. Participants became familiar with their biotic and social community in addition to understanding their physical place in the world. Through mind mapping and child-led investigations in the outdoors, researchers focused on children's perspectives. Findings revealed transformative effects from the nature play experiences. Firstly, children expanded on nature play through a wider range of games; played fairly; engaged more in teamwork; supported each other; and interacted with children outside their usual playground group. Secondly, child-environment, child-child and child-adult relationships became strengthened as the children showed respect (a cornerstone of responsible global citizenship) for all human and non-human species. Finally, children's overall physical capabilities were improved as they developed better balance and physical fitness as they interacted in the more physically challenging natural environment.

It is evident that the study by Haas & Ashman (2014) emphasized how participants gained knowledge about nature through interactions that were fostered by being in a natural environment in a local context, and how the natural environment supported children's holistic development and for sustainability. Another important factor that

contributed to the success of the study was the carefully planned nature play program that was developed by the teachers prior to the nature play. This was based on the premise that practitioners' qualities, beliefs and roles are important for teaching and learning for sustainability as they reflected on their practice. Being outdoors in nature also provided the practitioners time and flexibility to observe the children, engage them in conversations, guide and challenge them as appropriate. I was mindful of these issues in my planning for this study as I acknowledged and respected practitioners' knowledge of sustainability that enabled us to co-plan activities for children, quality time for conversations and dialogues amongst participants, and opportunities for the team's reflections on the activities that we co-designed for the children, in the research process.

Fägerstam (2012) and Norðdahla & Jóhannesson (2014) explored the observations and views of Australian and Icelandic teachers respectively, on the role of the outdoor environment in children's learning, in their support that children's experience of the physical environment is important for their learning, and for sustainability. Findings showed that outdoor education can affect children in a multiple of ways such as sensory stimuli experiences (with plants, shade, water as well as space) and more challenging facilities like play equipment, fences and small house to play in. It also provided opportunities to further children's health and well-being through being in a natural pollution-free environment; for physical challenges and risk-taking; and finally, to further their environmental awareness. The teachers agreed that being outdoors and experiencing nature contributes to children's cultivation of positive attitudes towards the environment coupled with their willingness to protect it and live in more sustainable ways (Chawla & Cushing, 2007). Teachers recognised the potentials of the outdoors in children's learning that impact on their becoming actors of change, such as cleaning up garbage outdoors, teaching children not to litter, taking care of animals in the playground and learning about their community. (Fägerstam, 2012; Norðdahla & Jóhannesson, 2014). The teachers also agreed that in addition to offering children sensory learning experiences, they were able to teach them names of things and places through communicating with them, thereby highlighting the important role of adults in children's learning.

The fact that the participants in Norðdahla & Jóhannesson's (2014) study were purposively drawn from eight schools participating in a research and development

project called ActionESD (Educational Action for Sustainable Development), whilst those in Fägerstam (2012) were also experienced science teachers with knowledge of environmental education, contributed to the success of the project. This meant that since they already had experience in using the outdoor environment in their teaching and are an 'information-rich' sample, who have prior knowledge of ESD, it cannot be assumed that the results would be the same if the authors had focused on participants with limited knowledge of using the outdoor environment in their teaching or no previous participation in education for sustainability projects. There was also a lack of children's voices in the studies to explore their own views. On a positive note, the findings showed how being outdoors can be beneficial for children's development and for sustainability from teachers' perspectives.

3.3 Expressive arts

Closely linked to play in nature is the view that nature is an inspiration for various forms of expression in the arts as it helps children to develop powers of observation and creativity (Ritchie et al., 2010; Wilson, 2012). I believe that when children experience the awe and wonder of nature, it is not surprising that they would want to share this experience through the arts. As childhood is the period when children's imagination and fantasy are inherently at its peak, this makes the expressive arts key to learning in the early years (O'Gorman, 2015; Luff, 2018a).

Wilson (2012) claimed that creative play in natural environments enhances individuals' development of deeper understandings and appreciation of nature. This development enables ideas of sustainability to be explored with young children through the multiple languages of this medium that include visual arts, dance, drama, music and media arts, all of which provide humanity with different means of expressing their understandings of the world (O'Gorman, 2015). Each strand of the arts is its own language and provides fresh and sometimes challenging ways for people to send and receive universal languages about the world (O'Gorman, 2015). The arts also have the potential to raise human consciousness about social justice and controversial social issues, including all the themes of sustainable development – human, economic, social and environmental - and connecting us with these ideas deeply and beyond words (McArdle, Knight & Stratigos, 2013). As the capacity to

imagine is a necessity for social justice, it enhances creative activity and imagination, enabling children and educators to place social justice at the heart of the curriculum through their ability to imagine a future self; how they might all live together; or imagine different ways of doing and being. An absence of this awareness may lead to educators' unpreparedness and hence, inability, to teach students from diverse backgrounds (McArdle et al. 2013).

When children use the arts to communicate their thoughts, they sometimes do so in unexpected ways (O'Gorman, 2015). The study by McArdle & Spina (2007) examined the place of art in the curriculum for young children of refugee families in urban Brisbane, Queensland. Nine 8-year-old pupils were given opportunities to engage with learning, build self-concept and tell stories of their experiences as recent arrivals in Australia. The children, who had recently emigrated from countries such as Afghanistan, Sudan and Liberia in Africa, took part in three visual arts workshops that involved shared conversations between them and their teachers. They also explored arts materials and processes to create self-portraits that depicted their current social circumstances – friendships, teachers as well as their hopes for the future, rather than stories of war and trauma. The arts in this instance gave the children languages to tell their stories rather than the stories that adults might predict that they would tell. Using the arts in this way for sustainability learning can support children in expressing their concerns either for themselves or for others. I am of the view that it would have been beneficial for the researchers to also include other children of non-refugee families in the study to examine their current social circumstances. This would have given the study a more balanced approach when comparing experiences of both groups of children, and the fact that the study is a small scale means that findings cannot be generalised. On a positive note, the study showed how the arts helped children to express themselves with support from an artist, and this development also helped to shape this study as the team supported children during creative activities.

The study by Tarr (2008) focused on practitioners who were assisted by a researcher to explore various techniques for using the arts (including storytelling, music, painting, drawing or handiwork) to incorporate concepts and representations of the natural world into their programs. As the setting had no outdoor space, participating staff had to explore how the project could incorporate the natural environment into their programmes. Concepts about the natural world were presented to the children through

songs, stories, verses and visual and dramatic arts experiences related to the children's current levels of understanding and interest. These were used as starting points and determined through discussions with, and observations of, the children so that the material presented was meaningful and accessible to them. Findings revealed that arts-based pedagogies were effective for teaching young children about the natural world with similar benefits in enhanced understandings for early years professionals of both the natural world and how to incorporate the natural world into all aspects of the program. Children's behaviour, both individually and as a group, also changed as a result of the stories. And finally, the opportunities for creativity through handwork or craft, improved children's fine motor and coordination skills (Tarr, 2008; Luff, 2018a).

While it could be argued that the study by Tarr (2008) fostered creative appreciation of the natural world by her attempt to incorporate concepts of the natural world indoors, I am the view that this alone is insufficient for children to fully appreciate and learn about the natural world. Kiewra & Veselack (2016) demonstrated in their study how outdoor environments supported children's creativity and imagination. Children in the study by Tarr (2008) could have been offered opportunities to experience the outdoors to enhance their imagination and creativity prior to the indoor sessions with their teachers. It is important to mention that the teaching strategies adopted by practitioners showed how the success of the project was enhanced through collaboratively exploring how to present materials to children in creative ways. This development draws attention to the need for practitioners to support children in renewing their contact with nature as well as to work collaboratively to support their learning.

Ward's (2014) study that relied on educators' funds of knowledge with regards to their creative practice and the natural world, used children's interests in the natural world and props to create stories with children aged 3-5 years. A story of water droplets, sun rays and rainbows led to further investigation through other arts-based media such as painting, light tables, prisms in the window, drawing and song. Through these processes, educators developed an appreciation for the natural world, and were able to find new ways to engage children with flora and fauna in the locality (Luff, 2018a). Similarly, the study by Luff, Miles & Wangui (2015) helped to develop and reinforce children's knowledge about bats when they were supported in drawing bats and making bats/bats habitats from recycled materials. Children and practitioners role-

played bats wearing bat capes wings and living in a bat cave, acted out echolocation in a bat and moth game where some children, acting as bats, were blindfolded, and had to listen out for 'moths' acted by other children. This included singing songs about bats (Luff, 2018a). This study also drew my attention to the need for practitioners' content knowledge in teaching and learning for sustainable development, and I considered this issue in planning for my own study.

3.4 Children's interests

The generally agreed notion that creating strong connections between children's interests and existing knowledge promotes learning in early childhood education (Bertram & Pascal, 2002; Siraj-Blatchford et al, 2002), holds true for children's learning for sustainability. Evidence for this was shown in Tarr's (2008) and Ward's (2014) studies that showed the importance of using children's current level of understanding and interest for their learning about the natural world, and for sustainability (see also Prince, 2010).

Similarly, the process to examine how agency was constituted for 4-5-year-olds in a Swedish study by Caiman & Lundegård (2014) was captured as they participated and took control of their activities while working in the garden. The children's curiosity and interests became pedagogical tools to further their activities. In addition, young children's learning about well-being and environmental education was fostered in the New Zealand study by Edwards et al. (2016) when educators generated relevant topics that related to the children's observed popular-culture interests with a specific focus on food products. These studies provided me with insights into the need to use children's interests in planning for sustainability learning in this study. Practitioners and I were led to build on the children's interests in planting and bees through growing a wildlife garden.

3.5 Literary explorations

Children's literature, including picture and story books, is a powerful tool in raising children and young people's awareness for them to actively engage with, understand as well as take responsibility for the creation and enjoyment of a sustainable future

(Reid, Payne & Cutter-Mackenzie, 2010). The authors argued that using books on specific topics to present sensitive or difficult concepts to children in child-friendly manner could help stir their curiosity to ask questions which may ultimately lead to changes in attitudes and action. Telling children stories that encourage their critical thinking abilities, an appreciation for differences, coupled with a sense of fairness are important for a child's development (Baker, Martin & Pence, 2008) to support them in examining and changing personal lifestyles for a sustainable future. Stories can support children in identifying, investigating, evaluating and undertaking appropriate action to maintain, protect and enhance local and global environments. They also help to challenge children's preconceived ideas, support them in accepting change, acknowledge uncertainty and to work cooperatively and in partnerships with others (Medress, 2008). Similarly, books with sustainability focus can be a powerful means of exploring issues of equity and justice, with young children (Yokota & Kolar, 2008) whilst those with multicultural and international themes can help to promote cultural and global awareness as well as advocate for peace and social justice (Yokota & Kolar, 2008).

Storytelling is also viewed as an effective ESD pedagogy in the sense that values reflected in traditional stories that often contain wisdom of the elders help to impart respect for cultural heritage as well as the environment (UNESCO, 2012). Hence, traditional stories that model harmonious relationships, compassion and harmony told in simple language are useful for the integration of children's literacy development, value education and as a tool to teach children about harmony in social, economic and ecological domains (Chan, Choy & Lee, 2009). They also provide rich opportunities for children's learning about diverse cultures or recognise how a series of events may affect the world as they help to bridge the gap across cultures by acting as mirrors through which they experience cultures other than theirs, thus helping to form bridges between their personal life and that outside their homes (Medress, 2008).

Even though young children's understandings of issues of ESD cannot be compared to those of adults and adolescents, their understandings of sustainability are worthy of note (Spearman & Eckhoff, 2012), as they, too, can be interested and compassionate about different cultures, environments and economic systems of the world, through books featuring unique stories of children and families from across the globe. When choosing such books, attention should be paid to their cultural authenticity to reflect

values, beliefs and attitudes which members of those communities accept (Yokota and Kolar, 2008). The books' authenticity can help to foster better understanding and awareness of other people's lives/cultures, help build empathy and a sense of global citizenship, and enable children discover similarities or otherwise with their worldwide peers. Insights from these authors have helped to shape this study as the team planned for children's learning for sustainability using children's literature.

3.6 Child agency

When considering agency, it is important to remember that children of today are the decision makers of tomorrow. The questions and issues that they are likely to face in the nearest future are likely to be different from those that they currently face. This realisation makes it necessary for education systems to provide opportunities for children to develop thinking and decision-making skills that they will need for ongoing adaptation to active change for sustainability (UNESCO, 2010a). Children should be encouraged to explore and learn about sustainability issues; think critically and creatively; form and defend opinions according to existing and new understandings of sustainable development principles, concept and values; and to develop skills needed to engage in informed and ethical decision-making, amongst others (ibid.).

Based on these arguments is the awareness that if children are to grow up in a world that maximises their development opportunities, the concept of 'Earth stewardship' that considers the needs of future, as well as present, generations (Davis & Gibson, 2006), offers a useful framework that adults might adopt to encourage children to develop world views that are forward looking even as they nurture hope, peace, equity and sustainability in the present. Earth stewardship involves ecocentric (placing value on all living organisms and their natural environment irrespective of their benefits to humans), rather than anthropocentric (the view that humans and their existence are central to the universe) ways of thinking, acting and living with the recognition that people are a part of natural systems rather than separate from them. Early childhood education and care is fundamental to this process as it recognises that early learning, especially on environmental issues, is important for shaping environmental attitudes and actions in children in addition to providing significant groundings for adult

activism in environmental issues (Davis & Gibson, 2006; Chawla, 2006; Blair, 2009; Young & Moore, 2010; Brook, 2010). The awareness that the Earth cannot wait for children to grow before benefiting from their stewardship to actively participate in such issues to make a difference means that they need to be seen and heard now. Giving children a voice means actively listening to them to validate their thinking and support their actions in education.

Early childhood educators addressed these challenges in the Sustainable Planet Project (SPP), a qualitative study in a daycare centre in Brisbane, Australia. The project explored the rationale and key processes which underpin sustainability; explaining the local/global motivations that led to these becoming part of the centre's curriculum; outlining how issues/topics are raised and acted upon by children, teachers and parents as well as theorizing how sustainability thinking, and practices became integrated into the cultural practices of the centre. Findings from this study have helped to shape the methodology I adopted for this study especially in the ways I was able to provide explanations for how issues/topics were raised and acted upon by the participants in addition to theorizing how sustainability thinking became integrated into the nursery setting's practices.

Similarly, Engdahl & Ärlemalm-Hagsér (2008) and Ärlemalm-Hagsér & Engdahl (2015) demonstrated how children's voices influenced ESD in their Egg Project with preschool children and their teachers by holistically integrating the social, economic, environmental and political dimensions of ESD in Sweden. Starting with discussion about dinosaur eggs, the project became driven by children's questions and answers about eggs, hens and life, and provided inspiration to visit a nearby farm. Children analysed the economic and ethical cost of eggs produced from alternative ways of egg farming (caged hens and free-range hens). The learning process empowered the children to demand for changes in their local settings, such as a ruling that preschools in the municipality should buy eggs only from ecologically certified farms. This ruling was instrumental in alterations to the teachers, children's families and relatives' egg-buying preferences.

Similarly, Engdahl & Rabušicová's (2011) project, organised by the World Organisation for Early Childhood Education (OMEP) gathered knowledge about the

thoughts, comments and understandings of young children aged 2-8 years using a picture showing the globe. Findings showed that children under 8 years of age have rich understandings of the earth and environmental issues, understanding objectives, people and actions. They were able to grasp causes and consequences of unsustainable human actions on the earth; provide suggestions for protecting the environment; recognise the interdependence of all people, and between human and nature. The project also showed strong support for action for ESD from early childhood educators, parents and other professionals, and identified the need for well-educated teachers who are prepared to make conscious decisions about preschool programmes.

The Swedish Earth Hour study by Ärlemalm-Hagsér (2013a) included dialogues that demonstrated children's understandings of the earth, space, raised some ontological questions about metaphysics as well as idealistic-realistic world views. These views were negotiated through communicative actions that included consensus and respectful disagreements and a search for truth. The study highlights dialogues as starting points for shared meaning making and participation in early years settings, thus drawing my attention to the issue of the need to adopt the approach of dialogues and conversations in my study.

There is a close link between actively listening to children and their having rights as stipulated by the United Nations Conventions on the Rights of the Child (1989). Children's rights to be involved in issues of concern to them must be respected, with the move away from the romanticised notion of childhood as a period for innocent play and children's sheltered lives untouched by global events. In recognition of this viewpoint, we need to realise while it is not the intention to burden young children with the world's environmental problems, they still have a right to be engaged with a curriculum and local community issues considered within appropriate early childhood pedagogies that are sensitive to context and relevant to their culture. The New Zealand study by Mackey (2012) focused on the importance of honoring young children's rights to know about issues that impart on their lives and the right to become significant players in acting for a sustainable future. Findings showed that when young children are supported by an understanding early childhood community that encourages them to participate in discussions around local and global issues, they become more aware of what imparts on them and others and able to demonstrate ability to care about the environment within democratic processes.

Caiman & Lundegård's (2014) study also provided evidence that children are active stakeholders and participants on issues concerning the environment and its sustainability. The study examined how agency is constituted in the context of 4 to 5-year-old Swedish preschool children's science-related issues and focused on processes that described children's abilities to participate and take control of their activities while working in the garden. Findings showed that children's agency involved their conscious decision-making about issues relating to the environment as they displayed caring attitudes and anticipations towards living organisms, their anticipations towards concerned problems, the actions they took, how they were fulfilled and their closure.

Children's voices also informed change in Davis & Gibson's (2006) study where their concerns about excess water use and the visual impact and damage of dumped trolleys from local supermarkets on the environment, led to the 'Water Conservation' and the 'Shopping Trolley' projects respectively. Children's questions became the driving force in projects by Ärlemalm-Hagsér (2013a) where their questions on other topics provided opportunities for rich conversations between them and their teachers; as well as the Egg Project in Engdahl & Ärlemalm-Hagsér (2008; 2015). These studies showed that if children are regarded as having rights, adults need to not just listen, but also to validate their thinking by acting to support their actions on issues of concern to them.

3.7 Morally aware citizens

Sustainable development is a moral issue and an important dimension in children's lives (Johansson, 2009). Morality is assumed to be a result of intersubjectivity, based on interactive and communicative relations with others, which allow a diversity of dimensions for children's moral discoveries (ibid). Their morality, therefore, becomes shaped from their social interactions as they engage in various activities as members of a culture or society, with focus changing from a child's cognitive or emotional activity to consideration for complex interactions between the child and the world (Johansson, 2006, 2007). As such, children can learn about morality under certain conditions including either the reactions from others, or their perception of the implications and consequences of what the acts might be through opportunities created for reflections. This suggests that the necessity to maintain democratic values while at

the same time respecting diversity of values, especially in the early years, becomes the responsibility of education to assist future adult citizens to become moral and respectful individuals. This goal can be achieved when educators of young children are able to provide opportunities for the children to debate and challenge each other's opinions as well as develop their own ideas (Johansson, 2006, 2007). This action highlights educators' recognition of children's rights as a cornerstone of sustainable development, thus enabling them to transmit attitudes and beliefs about the importance of respecting others' rights thus creating a supporting and respectful atmosphere (ibid).

Johansson's (2009) discussions of moral issues in early childhood settings highlight some core values and competences as possible dimensions in children's learning for global citizenship and sustainable development as evident in the everyday interactions between children and teachers in preschool. Johansson's examples, drawn from research on morality among children aged 1-6 years in various Swedish daycare settings, focused on questions which bordered on the kinds of moral values considered important for learning for global citizenship and sustainable development and the competences that children need to develop as members of a global society. Findings revealed that issues such as conflicts of rights, support for the well-being of others, justice, children's courage, responsibility and reflection, are core values in children's interactions in preschools indicative of their early learning for sustainable development and their identities as global citizens.

3.8 Inner and outer harmony

I believe that before a sustainable society can exist, there must be harmony within individuals, between individuals and nature, as well as between individuals and the society at large. When this is the case, respect will be at the centre of our relationships and this can help make the world a better place for all to live in. I refer to the concept of sustainable development that Yan & Fengfeng (2008) link with the Chinese philosophy of harmony, as being fundamentally about values – values that have respect at the centre: "respect for others, including those of present and future generations, for difference and diversity, for the environment, for the resources of the planet we inhabit" (p. 47). This idea originated from the Chinese approach to sustainable

development which encompasses human activities, the environment and the society and ensures the harmony between human beings and nature, the harmony between people and the society they live in, as well as the harmonious development of the individual (ibid.).

Just as harmony between people and society is important and calls for a democratic, just, fair and stable society that ensures the human rights of everyone, humans and nature also need to get along in harmonious ways (as they are equal) and this relationship should be enhanced by the urgent reinforcement of nature's protection (Yan & Fengfeng, 2008). Based on these viewpoints, harmonious development of the individual needs to be holistic through lifelong learning and development through quality education. When applied to the early years, young children need to be supported to understand themselves and others and their links with the wider natural and social environment. They also need to learn about global issues whilst respecting the diversity and difference of cultures and people of the world. This goal can be achieved by integrating these issues into the curriculum to reflect their current needs, interests, experiences and potential abilities.

The Chinese study by Chan, Choy & Lee (2009) that fostered children's caring attitudes by raising their awareness of environmental sustainability through the concept of reusable waste, provides evidence that harmony can contribute to understanding sustainable development. Starting with participants' brainstorming of topic of interest, the project investigated some aspects of reusable waste including: home/school waste, a visit to an environmental resource centre; scientific experiments; regular visits to the Yew Chung Farm where children had direct contact with nature; and the Return to Nature (Pink Dolphin) Project, amongst others. Findings showed that children gained understanding of the importance of caring for nature and all creatures as well as the interdependence of human and nature, and the beauty of living harmoniously. I have been inspired by this study in the ways practitioners and I have observed children's behaviours and their interactions with other children and adults and their environments. This enabled us to co-design activities that focus on the creation of a peaceful and harmonious atmosphere for children's teaching and learning for sustainability in this study.

3.9 Family influences

Families are children's first educators due to the enormous influence they have in shaping young children's attitudes, values, behaviours, habits and skills (Pramling Samuelsson & Kaga, 2008; DfE, 2017), and this highlights the central role they play in educating their children for sustainable development. The family's role as a major agent in children's knowledge production, strategies in entrepreneurial upskilling and sustainable lifeskills in early childhood was upheld in the studies by Moll, Amanti, Neff & Gonzalez (1992); Vélez-Ibáñez & Greenberg (1992); Mbebeb (2009); Hedges, Cullen & Jordan (2011); and Borg (2017). Families' interactions in social relationships including gardening and baking supported children in gaining some lifelong skills that are essential for sustainability in the US studies by Moll, Amanti, Neff & Gonzalez (1992) and Vélez-Ibáñez & Greenberg (1992). The studies focused on US-Mexican families on their exchange of expertise and knowledge in the face of economic deprivation. Even though the term' funds of knowledge' was not explicitly mentioned in the study by Borg (2017), families were also reported to be children's main sources of knowledge.

In the discussion paper that focused on family influences from an African perspective, Mbebeb (2009) based his arguments on the premise that societal sustainability depends on individuals' mental and behavioural sustainability. He argued that an individual's entrepreneurial mindset priming is a viable component of early childhood education through life skills orientation within the family. This meant that societal behavioural dispositions are dependent on educational values employed to niche children to adapt in a sustainable mode to today's environment while developing aptitudes for tomorrow's challenges. This led to his contention that nurturing children is emphasised as a growth-promoting mechanism through socialising agents like formal and informal education frameworks, and this is despite children's biological dispositions. His argument arose from interest in non-formal education arising from a socio-cultural enterprise where knowledge is generated for and with learners in a participatory and utilitarian mode which highlights the key role the family plays in early childhood learning through socialisation. On this note, Mbebeb's view of African indigenous education being part and parcel of the culture, built on the daily routines and activities of the family and kinsmen, validates the position of the family as a socialising agent in early childhood education that can promote entrepreneurial competence.

Even though Mbebeb highlights some negativity of academic institutions' tendencies to push the role of the family to that of socio-moral and cultural educator of the child, learning effectively for sustainability can still be effectively undertaken by parents, siblings, grandparents and other extended family members as they often have old wisdom about ways of life that favour sustainable practices, especially where formal early education programmes are not available (Pramling Samuelsson & Kaga, 2008; Prince, 2010). I was inspired by these developments in planning for this study as I adopted a framework that enabled children and adults to work together to co-construct knowledge and understandings of sustainable development. In doing this, I considered participants' background influences on their attitudes, skills, values and practices as crucial factors used as basis for their teaching and learning for ESD.

3.10 Educators' content knowledge

Educators' content knowledge is an important factor to consider in teaching and learning for sustainability (Pramling-Samuelsson & Park, 2017), as it is generally believed that there is a close link between their content knowledge of a topic or concept and their planning effectively for children's learning of that topic (Sund, 2008) This is because evidence abounds that show them as having a great influence on children's education, especially in the early years where they design and teach curriculum events, activities and opportunities that support children to achieve certain learning outcomes. Based on this argument, it is a common-sense notion that a teacher will teach what he/she particularly cares about (Sund & Wickman, 2008) and this holds true for practitioners' planning effectively for sustainability.

The link between educators' content knowledge of sustainability and their planning effectively for children's learning of the topics, highlights educators' rich content knowledge of sustainability as vital for their effective planning for children's learning. Evidence from Tarr's (2008) study demonstrates how staffs' professional knowledge of the arts developed through workshop sessions with researcher enabled them to factually and creatively introduce concepts relating to flora and fauna to the children using various resources as props for telling the stories with familiar characters as key players for them. The story developed a life of its own based on children's interest,

with staffs extending these stories through movement and music; visual arts to reflect and/or express elements of nature such as growth or form, and through creative arts.

Teachers' knowledge about sustainability issues including pollution, over-fishing and their understandings of the unity of humans and the planet Earth, contributed to children's effective learning experiences in Prince (2010). Teachers' knowledge resulting from participation in a sustainability project; teacher education through modelling and scaffolding and their funds of knowledge in creative practice and the natural world, contributed to effective learning for sustainability in studies by McNaughton (2012), Norðdahla & Jóhannesson (2014), Ward (2014), and Hirst (2019). However, it is evident that limited or lack of practitioners' professional development on sustainability coupled with inadequate planning for the activity led to their inability to effectively make explicit the knowledge content of energy conservation to the children in Ärlemalm-Hagsér's (2013a) study. This issue raised my awareness to the need to work closely with the practitioners in my study who have not had training in sustainable development. My need to achieve the aims of the research led to my exploring their knowledge and understandings of sustainable development through initial one-to-one interviews as well as in team meetings. In addition, constant discussions and reflections about what activities needed to be carried out with the children led to better planning for sustainability teaching and learning and the achievement of my research goals.

Nikiforidou, Miles & Luff (2015) also highlight early childhood educators' role and attitude in drawing and directing children's attention to aspects related to ESD that support children in engaging with the topic, providing safe and enabling environments for them as they implement activities that foster communication, participation and interaction. This in essence means that educators need to intentionally plan for children's play experiences using their professional judgement to identify environments and activities which interact with learners' existing capabilities to create a worthwhile experience, and this holds true for sustainability learning. Expecting children to learn concepts relating to ESD on their own whilst playing freely may result in their missing the intended concepts of ESD that could be embedded in their play experiences (Edwards & Cutter-Mackenzie, 2013).

Challenges such as those mentioned led to my need to explore practitioners' knowledge and understandings of ESD using individual semi-structured interviews at the initial stage of this study. I believed that gaining insights of their perceptions of ESD would be the first steps towards arriving at shared understandings of the concept as used in the study. Support for this view is evidenced in findings from two studies: the Australian study by Hill et al. (2014) and the Swedish study by Ärlemalm-Hagsér & Sandberg (2011) that both explored practitioners' understandings of sustainable development and their current sustainability practice initiatives.

Whilst findings from Hill et al. (2014) showed a clear trend between practitioners' conceptualisations of sustainability and their reported practice initiatives such as gardening, using food leftovers for chickens or recycling, community gardening, cooking classes and family food patch aimed at parents and community workers; those from Ärlemalm-Hagsér & Sandberg's (2011) study revealed practitioners' descriptions of sustainability under four themes - fundamental values (listening to children's views) and social relations (such as being kind to one another); nature (including outdoor play, waste sorting and composting); learning (through play, circle time, pedagogical documentation and collaboration between children and staff); and physical needs (physical play, nutrition and food). Even though practitioners' understandings were explored in an exam task in this study, thereby making their descriptions to reflect the course content rather than their individual understandings of the concept of SD, the study was validated due to their definitions of SD from different perspectives, using quotations which provided concrete form to the results, as well as gave feedback on the results.

3.11 Incremental changes to attitudes

Marked positive changes in participants' attitudes and behaviours through their participation in ESD activities were evident in the reviewed ESD studies. Positive transformation in participants' attitudes and learning about the environment and active citizenship became evident in Gambino, Davis & Rowntree's (2009) study where children developed attitudes of concern, care and affection towards the endangered Bilby and other animals and insects as they identified actions to protect them. Similarly, transformation in participants' attitudes and learning about the environment

and sustainable practices in Prince (2010) and Fisher-Maltese (2016) was observed as parents gained better awareness of sustainability issues leading to their promoting actions for the environment e.g. recycling, and the need to be more respectful of the environment. Teachers learnt new things and researched topics of interest with greater focus on sustainability as shown in studies by Ward (2014) and Hirst (2019) that revealed how educators developed an appreciation for the natural world through engaging in arts-based pedagogy to enhance children's understanding of the natural world. In addition, transformative effects from nature play experiences on children were observed in Haas & Ashman's (2014) study as children expanded on nature play through wider range of games, played fairly with progress in all areas of development, increased teamwork and interacted with other children outside their peer groups. These changes were coupled with strengthening of child-environment, child-child and child-adult relationships which developed from their participation in activities arising from the study, and it also enabled all participants to show respect for all human and non-human species, as well as improvement to children's overall physical capabilities.

My awareness that the noted changes in participants' behaviours in these studies took place in small steps over a period of time resonates Davis & Gibson's (2006) argument that change which emanates from participating in ESD projects is an evolutionary, rather than a revolutionary process. The change emanated from the organisation's history; the people and the quality of the existing relationships; and the educator's shared sense of ownership of the Sustainable Planet Project in their study. These factors provided a platform for change at the deepest level of the centre's practices and philosophy, as it involved changes in fundamental relationships; in changing understandings of key areas of the curriculum; pedagogy; how children learn; as well as in teachers' skills and behaviours. This resulted in a culture of sustainability that permeated the entire centre, and where young children were active participants in changing their world.

3.12 Summary

In this chapter, my review of studies on environmental education and early childhood education for sustainable development has enhanced my understandings of ESD in terms of interpretations of, and insights into the concept. This review led me to identify

eleven key approaches which I hold to be important for addressing sustainability issues and which should be considered by practitioners when planning and implementing practical activities that support ESD with children. In my examination of each approach in turn, I particularly focused on the methodology adopted (qualitative action research e.g. in Prince, 2010, Ward, 2014) as well as how they influenced teaching and learning of ESD in early years settings. These approaches also have implications for how teaching and learning activities can be shaped to promote better knowledge and practice of ESD within an early years setting.

Finally, and as mentioned in the introduction to this chapter, insights gained from the review of literature highlighted some theoretical perspectives from which the studies were carried out, and which have influenced my adoption of some theoretical perspectives for my study. I was inspired by the way participants worked together, listened to one another and shared experiences in their attempt to achieve common goals in the studies (e.g. Davis & Gibson, 2006; Tarr, 2008; Ogelman, 2012). Also, my acknowledgment of participants' knowledge and interests and focusing on their views and understandings of issues as basis for pedagogical planning for play experiences emanated from the review of some of the studies (e.g. Caiman & Lundegård, 2014; Norðdahla & Jóhannesson, 2014; Hill et al., 2014; Ärlemalm-Hagsér & Sandberg, 2011) where children's and practitioners' interest and knowledge were used as bases for pedagogical planning for play experiences. Hence, the reviewed studies have been useful as means of analysing findings from the research. The next chapter of this thesis (Chapter Four) will address the theoretical framework that have guided this study in more detail.

Chapter Four: Theoretical framework for the study

In this chapter, I present the theoretical framework that underpins this study. A theoretical framework is the lens through which a researcher views the world (Merriam, 1998). In a qualitative study as one presented here, the theoretical framework is the structure that guided my thinking about the research design, participants, methods of data collection, as well as the interpretive lens for viewing data collected (Savin-Baden & Howell Major, 2013). I derived the theoretical framework from findings and conclusions in the reviewed studies in Chapter Three. Findings from studies (see Prince, 2010; Mackey, 2012; Stuhmcke, 2012; Borg et al., 2017) showed that participants acquired knowledge, values, attitudes, skills and practices of sustainability with the contextualised process of their learning through social interactions at the core when issues that were central to environmental education and sustainable development, were presented to them. Hence, the nursery is positioned as a naturalistic setting which enabled participants to make meaning of their world in the research process (Mukherji & Albon, 2018).

The theoretical framework that has guided this study is unique in the sense that it is the first of its kind to be described in relation to three specific theories that explain the ways in which participants' learning and development is influenced by their social and cultural contexts in their learning for sustainability. I firstly draw on Vygotsky's (1978) socio-cultural theory which illuminated participants' interactions, habits and language in the nursery setting as they occurred on an everyday basis. This theory demonstrates how the context becomes important and inseparable from the participants.

As I pondered on Vygotsky's socio-cultural theory, I observed that participants not only come together in a social context to co-create knowledge which is meaningful to them, but that to do so, draw upon their existing wealth of knowledge and experiences based on their understandings of the world. Vygotsky's socio-cultural theory highlights how participants' knowledge and experiences arise through active participation in family or elsewhere. This led me to consider and adopt the second theoretical perspective known as 'funds of knowledge' (Moll et al., 1992).

Finally, the reviewed studies highlighted how participants' learning for sustainability became more meaningful and effective when enshrined in caring relations. This was

particularly evident in studies reported by Chan, Choy and Lee (2009) and Norðdahla & Jóhannesson (2014) where the caring for one another enhanced understanding of the importance of caring for nature. Good relationships provided opportunities for communication, enabling participants to share, as well as co-construct knowledge with others. This led me to introduce a third theoretical perspective to this study, the ethics of care as articulated by Noddings (1984) who positions caring at the heart of learning experiences. Caring for oneself, others and the environment was pronounced in the reviewed studies suggesting that the ethics of care and its impact on children's learning in educational institutions needs to be addressed in relation to sustainability learning in the early years (Wals, 2017).

This chapter focuses on these three theoretical perspectives: Vygotsky's (1978) socio-cultural theory; Moll et al.'s (1992) 'funds of knowledge' perspective, and Nodding's (1984) ethics of care; whilst demonstrating their relevance to this thesis. These perspectives complemented each other as they helped to add depth to my work by shedding light on how participants make meaning of their world in a given context. The perspectives also helped me to gain answers to the research question through the study's design, methods of data collection and analysis of my findings.

4.1 Vygotsky's socio-cultural theory

My review of studies on environmental education and sustainability in Chapter Three showed how learning for sustainability is fostered when participants interact with one another in social contexts (see Prince, 2010; Hedges & Cullen, 2011; Borg, 2017). My understanding that learning for sustainability was achieved through cooperative engagement in tasks and activities led me to consider Vygotsky's proposition that learning should be viewed in the context of a person's culture as well as the tools of thinking and learning that exist in that culture, and his emphasis on the role of direct intervention by more knowledgeable others in the child's learning (Vygotsky, 1978; Smith, Cowie & Blades, 2015). From this viewpoint, children's development reflects their cultural experiences that provide opportunities for their access to the more mature who already practise specific areas of knowledge embodied in their actions, technology, work, play, art, literature and ways of speaking of members of the particular society (Wood, 1998). Vygotsky's socio-cultural theory emphasises social

interaction as central to an individual's developmental process such as in their mental functioning and language. It is through speech that is formed through the processes of social interactions that an individual develops as a thinker (Vygotsky, 1978). Based on this claim, teaching and learning for sustainability in the reviewed studies was especially effective when participants had opportunities to be engaged in meaningful communication and dialogues with one other as evidenced in studies by Engdahl & Ärlemalm-Hagsér (2008), Prince (2010) and Norðdahla & Jóhannesson (2014).

Vygotsky's socio-cultural theory emphasises the role that peers and significant adults, such as parents and teachers, play in children's learning in the knowledge construction process (Vygotsky, 1978; Mercer & Howe, 2012; Ulvik, 2015; Smith, Cowie & Blades, 2015). Findings from Haas and Ashman's (2014) study show how children construct knowledge from their social interactions with others as they build upon the contributions of their peers during cooperative play in the outdoors. These contributions from others become evident at certain points in children's learning when they are unable to solve problems on their own, therefore needing the support of a more experienced other to succeed (Wood, 1998; Smith, Cowie & Blades, 2015). Vygotsky (1978) provides an explanation for this through the concept of the 'zone of proximal development' (ZPD) – the distance between what the child can achieve unaided and what he/she can achieve with the help of others. Intervention can only be effective when it is at a level beyond the child's existing developmental level, but not too far ahead, so that it can remain comprehensible, and so must sit within the ZPD. Within the ZPD, learning awakens a variety of internal developmental processes that enable the child to operate in cooperation with others in the environment. When these processes are internalised, they become intra-mental and turn into a part of an individual's independent developmental achievement (Vygotsky, 1978). This means that the expertise of the more knowledgeable that is actively harnessed to the child's level of competence and to the ZPD, supports their independence as active learners to act on their own. This was shown in the studies of Tarr (2008); Prince (2010); Hedges, Cullen & Jordan (2011); Ward (2014) and Edwards et al. (2016), where educators provided activities for children by considering their current levels of understandings and interests as starting points for sustainability teaching and learning.

My belief that practitioners should adopt purposefully-framed play (which translates into intentional teaching), when planning for children's learning of concepts linked to

sustainability echoes Vygotsky's (1978) view that children may sometimes need help in focusing attention on significant features of a task or a situation, as they may not make the right connection on their own (Smith, Cowie & Blades, 2015). Intentional teaching can fill this gap as evidenced in the studies by Gambino, Davis & Rowntree (2009); Edwards & Cutter-Mackenzie (2013); Norðdahla & Jóhannesson (2014); Haas & Ashman (2014) where educators were positioned as co-constructors of knowledge, values, attitudes, skills and practices of sustainability with the children in their care. This was particularly through the ways intentional teaching on sustainability promoted deep dialogic forms of interactions that enabled open-ended questionings and adults modelling skills or appropriate behaviours that fostered better understanding of concepts when educators and children worked and talked together.

The way participants' everyday activities and content provided meaning for their learning for sustainability also echoes Vygotsky's socio-cultural view that highlights the importance of everyday activities and content in providing meaning (thus forming the conceptual fabric) for the development of concepts learned in the nursery setting. If the teaching and learning of particular concepts is to be successful, one needs to go beyond the classroom walls as learning will be more effective when school knowledge informs a participant's perception and use of everyday concepts, and both are transformed to form a system of knowledge whereby participants acquire conscious awareness and control (Moll, 1990).

4.2 Funds of knowledge theoretical perspective

The concept of funds of knowledge is defined as the historically accumulated and culturally developed bodies of knowledge and skills essential for household and individual functioning and well-being (Moll, 1990). It is also based on the simple premise that people are competent, and in addition to that, they have knowledge which is given to them by their life experiences (Gonzalez, Moll & Amanti, 2005). 'Funds of knowledge' sits solidly within the framework of Vygotsky's theory of learning as a socio-cultural process (Hogg, 2012), as it utilises the notion of assisted performance that Vygotskians refer to as the 'zone of proximal development' (ZPD) (Genzuk, 1999).

‘Funds of knowledge’ is a term derived from the anthropological work of Vélez-Ibáñez & Greenberg (1992) who studied US-Mexican families and noted their exchange of expertise and knowledge in the face of economic deprivation. It has its roots in educational research, in a pilot project by Moll et al. (1992) that used households’ knowledge, cultural funds and skills to inform classroom practices in Tucson, Arizona in 1990. The project was a collaborative effort between local Mexican households in working-class neighbourhoods, university researchers and four teachers from elementary schools. The teachers assumed the role of researchers and conducted three open-ended interviews with selected families to document the nature and extent of family literacy with findings used to guide the classroom curriculum. They demonstrated that awareness of the social relationships that children participate in and the broad features of learning generated in their home environments are key to understanding their cultural identity and the learning potential of the classroom. Moll et al. (1992) also highlight two aspects of the domestic social relationships that contrast with typical classroom practices. The first aspect is the value of interacting with multiple persons from outside the child’s home. A network of ‘thick’ and ‘multi-stranded’ social relationships makes it possible for the ‘teacher’ in these home-based contexts to know the child as a ‘whole’ person, and not merely as a ‘student’, whilst also considering the multiple spheres of activity within which the child is enmeshed. This connectivity makes it possible to draw in additional resources when existing funds of knowledge within households are not sufficient to meet needs. In comparison, the typical teacher-student relationship seems ‘thin’ and ‘single-stranded’ as the teacher knows the students only from their performance within rather limited classroom contexts. Thus, the traditional classrooms can be viewed as encapsulated, if not isolated, from the social worlds and resources of the community (Moll et al., 1990; Vélez-Ibáñez & Greenberg, 1992).

Reciprocity is the second key aspect of these social exchanges and represents an attempt to establish social relationships on an enduring basis and these exchanges also express and symbolise human social interdependence (Velez- Ibáñez, 1988). The reciprocal practices on these social exchanges have the capability of establishing serious obligations that are based on assumptions of mutual trust which is re-established or confirmed with each exchange, thereby leading to the development of long-term relationships. Each exchange, whether with relatives, friends and

neighbours, not only entails practical activities, but constantly provides learning contexts where children have opportunities to engage in activities with people they trust. This positions children as active participants in a range of activities that are mediated by the social relationships they experience. Much of the teaching and learning in these contexts is motivated by children's interests and questions in contrast to the imposed knowledge in the classroom. The totality of children's experiences in work and play, individually and collectively with peers, with and without adult supervision, constitute the funds of knowledge children bring to the classroom (Moll, Vélez-Ibáñez & Greenberg, 1990).

Hedges, Cullen & Jordan's (2011) qualitative study of two early childhood settings in Aotearoa, New Zealand, found the notion of funds of knowledge useful for interpreting children's interests and experiences. The study examined children's interests and teacher engagement with them in curriculum interactions and found that children's interests, such as baking and cooking, were stimulated by their intent participation in family and community experiences. This highlighted the need for teachers to further engage with families and communities to gain deeper understandings of children's interests. Similarly, findings from a study by Edwards et al (2016) acknowledged that children held significant knowledge of popular culture that educators could use to generate topics associated with well-being and environmental education in the early childhood curriculum, with a specific focus on food products.

Funds of knowledge capitalise on household and other community resources that teachers can use to make planning for children's learning more effective. Its implications for teaching and learning is that relationships that develop from teachers' deeper understandings about their pupils could become the basis for the exchange of knowledge and contribute to academic content and lessons. Such knowledge, whether gained from pupils or their teachers, could become catalysts for forming research teams among the children on topics of interest to them or to the teacher, or in most cases, for achieving curricular goals (Moll et al., 1992). This suggests that teachers and educators, too, are understood as possessing a wealth of knowledge and experiences from their respective homes that they share with their pupils in curricular interactions, and I was mindful of this point when planning my research project.

My review of studies and papers on early childhood environmental education and sustainable development (such as those by Ward, 2014; Caiman & Lundegård, 2014; and Edwards et al., 2016), and the discussions of the origin of the theory that funds of knowledge enable participants' (educators and children) to capitalise on their existing knowledge and understandings offered a firm pedagogical basis for learning about sustainability. In addition, even though the term 'funds of knowledge' was not explicitly mentioned in Borg's (2017) study, it was highlighted that a significant relationship exists between children's learning for sustainability and home-related factors which could be useful for developing educational policies about sustainability in their preschool. Based on these considerations, I adopted the funds of knowledge perspective and this position has some implications for my study as evidenced in my need to examine and build on the rich experiences and knowledge that participants have acquired from their participation in daily family lives. This made it important to foster positive relationships with the participants to enable me to gain this knowledge based on mutual trust. I explored practitioners' knowledge and understandings of the concept of sustainable development, and together the adult participants in this study were equally sensitive to the range of skills, information and knowledge that children in the setting had acquired through their participation in family life. In exploring participants' understandings of sustainability at the initial stage of the study, I discovered that even though they had rich knowledge and understandings of practices derived from their participation in family activities, they were not always able to make links with broader conceptualisations of sustainability in their responses. In the attempt to promote ESD within the setting, our shared knowledge became the catalyst for forming a research team with the practitioners as I engaged them as co-researchers to draw upon our existing knowledge and understandings, working collaboratively to further develop and extend our knowledge as a basis for pedagogy and practice for ESD.

One important factor that enabled participants in the mentioned reviewed studies to achieve the goals of their projects was through the sharing of knowledge in reciprocal relationships. Reciprocity enabled participants to establish social relationships on an enduring basis based on mutual trust that enabled teachers to gain deeper understanding of their pupils. My assumption is that a crucial element of care is an underlining factor that has helped to make these social relationships effective. Based

on this assumption, I felt the need to explore a third theoretical perspective known as the ethics of care.

4.3 Ethics of care

The third theoretical perspective adopted for this study is the ethics of care as articulated by Noddings (1984, 2012a). My review of literature highlighted acts of 'caring for' in participants' relationships with one another, as in the need to 'care for' either oneself, others, or for the environment, to foster a harmonious existence on planet Earth as shown in studies reviewed in Chapter Three (see Chan, Choy & Lee, 2009; Engdahl & Ärlemalm-Hagsér, 2008; Ärlemalm-Hagsér & Engdahl, 2015; Edwards et al., 2016). This realisation strengthened the notion of care in my consciousness as a vital ingredient for sustainable development. This was because findings from studies showed how participants achieved the aims of projects through acts of caring for themselves, towards others, other non-human organisms and their environment. These actions show caring as relational because it is tightly tied to experience that focus on human beings and their relations to each other in situations under consideration.

My choice of ethics of care as a theoretical perspective developed through findings from reviewed studies that aligned with Noddings' (1984, 2013) conception of care as embodied and exercised in different ways and directions such as in caring for oneself, others, animals, plants and the environment (Wals, 2017). In the context of sustainability-oriented ECEC, elements of the ethics of care are essential for educators of young children as they are required to live by example by being caring in their actions and convey feelings to their pupils through modelling, dialogue, practice and confirmation through several activities organised around themes of care – for self, others, environment/natural world and its non-human creatures, strangers and global others (Noddings, 2012b, 2013; Wals, 2017).

The basic assumption of the ethics of care is the reciprocal relationship between individuals 'caring for' and the 'cared for' that Noddings (1984, 2005, 2013) interprets as 'care' in two ways – natural caring (motivated by love or inclination) and that arising out of moral efforts with her focus being on natural caring, rather than those carried out under a sense of duty. Noddings also compared natural caring to that of mother-

child relation where the one caring responds to the needs, wants and initiations of the cared for with total attention during the caring interval, whilst the cared for responds to this relation by recognising and responding in some positive ways, thus completing the caring relation.

Listening is an important element in the caring relation (Noddings, 1984). Opportunities that are created for peer interaction through open dialogue requires time and extended contact to enable educators and pupils to know each other well enough for trust to develop. This relationship enhances collaboration between educators and pupils as educators are enabled to gain better understanding of pupils' needs and cater for them. On this note, caring implies competence as teachers in these kinds of relations are continually driven to gain greater knowledge of their subjects (Noddings, 2005). This suggests that the caring relation, an essential starting point that provides a continuous framework of support for pupils, is insufficient on its own to ensure competent teaching (Noddings, 2005). Teachers need to be competent in their subject areas to help pupils in making sense of their varied interests and topics in meaningful ways for them to make connections between educational settings and the wider world. Teaching in this way can increase pupils' funds of cultural knowledge as they become participants in on-going shared conversation with caring and knowledgeable adults. In their planning for children's learning on sustainability, educators need to create safe contexts with space for experimentation that enables children to try things out and apply their agency as they see their places of learning as places they belong to, can identify with and want to take care of (Wals, 2017). Hence, research should concern itself with teachers' needs, views and their actual experience, rather than merely with outcomes produced through instructional procedures. There is scope, therefore, for research and development to become active partners in education, suggesting materials for effective teaching, fostering collaborative inquiry to support and enhance participants' relationships in their shared quest for better ethical selves (Noddings, 2005).

The ethics of care perspective fits in with my personal view of the world as I believe that humanity needs to care for not only themselves, but for others and their environment and every living organism. This means that educational institutions should be fostering grounds for caring relations where educators' show of care to pupils can enhance their learning in significant ways. Within these caring relations,

educators and pupils can work together under trusting conditions, share knowledge and arrive at shared understandings that contribute to pupil achievements.

In valuing practitioners' and children's funds of knowledge, this study seeks such a partnership. It also meets the requirements of trust and extended time, as I spent a significant period getting to know the participants to establish trusting relations with them before setting on a collaborative quest with practitioners to promote our knowledge of sustainability with the children in the setting. My actions also draw attention to the view of ethics of care as one that provides a framework that can guide ethical research practice (Brannelly & Boulton, 2017). This is because it recognises the multiplicity of relationships that individuals enter into and focuses on the need and political positioning of the people involved. Ethics of care also acknowledges power positions and aims to address such within the research context. It also supported me to encourage a shared language and vision that was accessible to those in the setting, as well as used as a guide for discussions for us to reflect on the research experiences and relationships (ibid.)

I have shown in the image on the next page how these three theoretical perspectives are linked. The participants are working together in a context – the nursery setting, as shown by the large broken circle that represents the social and cultural context that is central to Vygotsky's (1978) socio-cultural theory. The inner part of the circle shows how individuals' learning is situated within the social, cultural and historical contexts that play a part in their learning and development. Within the context of the nursery setting, as represented by the inner part of the circle, flows relationships as participants interact within the human environment (such as interactions between families, friends, peers, teachers and researcher). Participants are also represented as interacting with their natural environment as shown by the flora and fauna of the nursery garden such as trees, bees, worms, snails, butterflies and birds. In addition, they interact within the man-made environment such as the park, homes, schools or shops. The breaks or gaps in the circles represent permeability of interactions among participants and between participants and their environment. This means that participants construct knowledge through relationships that develop in multiple social contexts. They also learn from others through sharing of knowledge, which represents funds of knowledge. And finally, learning in a social context is enhanced when embedded within an ethics of

care that brings participants together with opportunities for enhanced communication, participation and interaction.

Diagram 4.3: A visual representation of the theoretical framework for the study

It is important to stress that despite the usefulness of the theoretical perspectives that have been adopted for this study, there is the need to be mindful of their limitations. For instance, in the aspect of Vygotsky's socio-cultural theory that focuses on the role of the collective, issues regarding a child's participation in activities for which they are not ready with a more knowledgeable other, may arise, and these may to lead to the imposition of that knowledgeable other's views on the child (Pathan et al., 2018). It is important to note that my report of events in this study showed how participants enjoyed carrying out activities as they interacted with one another and their environment in a social context. Hence, participants co-constructed knowledge with

one another through sustained shared thinking (Sylva et al., 2004) with no evidence of imposition of views by the more knowledgeable other.

On my adoption of funds of knowledge perspective, we also need to be mindful that individuals could be exposed to both positive and negative influences that may contribute to their funds of knowledge. Hence, the focus of this study is on participants' positive funds of knowledge.

The ethics of care is viewed as limited in its success and scope especially with regards to care within the global context. This is because the focus of the caring-for is restricted to those in close proximity, thus blinding them to the needs of those far away. The requirement that caring requires personal encounters with individuals, such as between the one caring-for and the potential cared-for, who needs to be receptive to as well as acknowledge the care given for the caring relation to be completed, as well as to build relationships (McKenzie & Blenkinsop, 2006; Taggart, 2011), suggests that in the process of caring for more distant others, lack of understanding of the true needs of the cared-for could result in misplaced caring (McKenzie & Blenkinsop, 2006). In addition, humans are finite and therefore cannot care for everyone.

On this note, there is need for us to appreciate that concerns about proximity should not limit our sincere efforts to care beyond the proximate and receptive as we live in a connected world where actions from one part can affect another. All that is required is for all to live caring public lives with an increased awareness of the implications of our actions or otherwise, to enable humans and other aspects of the natural world to meet their needs (McKenzie & Blenkinsop, 2006). This can be achieved through educators' modelling to pupils how to be cared for, how to care for themselves, others and the natural world. This is in addition to open-ended dialogues that foster a common search for meaning or understanding, empathy or appreciation, and helping individuals to connect with each other and maintain caring relations. Opportunities also need to be created for individuals to practice caring in multiple ways where they will be further exposed to acts of confirming and encouraging the best in others within a curriculum of care (McKenzie & Blenkinsop, 2006). Care is therefore an integral species activity fundamental to both moral and political life as it includes all relationships with human and non-human worlds (Taggart, 2011).

Finally, ethics of care perspective is viewed as not beneficial to feminism because of its tendency to reinforce traditional gender roles as there is the tendency to perpetuate women as carers and men as non-caring (McKenzie & Blenkinsop, 2006). There is potential, however, for an effective curriculum and social change if there is thoughtful engagement of the possibility of viewing care as ungendered. This can be through exposing both genders to the same curriculum, where educators of both genders will be able to model care in order to intentionally subvert socially constructed gender stereotypes in their roles as educators (ibid.).

4.4 Summary

In this chapter, I have presented arguments for adopting a theoretical framework based upon three perspectives that are interwoven to the study. Vygotsky's socio-cultural theory enabled me to consider how participants co-create knowledge in a socio-cultural context, as well as the role that adults and significant others play in the learning process. I argue the need for adults to purposefully draw children's attention to significant aspects of tasks to enable them to gain conceptual knowledge from them. Vygotsky's theory provided insights to the need to focus on a single setting, and the need to co-create knowledge with participants as evidenced in the choice of my research design, collection and analysis of data. The use of a single context also highlights the view that promoting sustainability values (as related to the ethics of care) can raise our awareness of our connectedness to others beyond our immediate environment. Participants were able to reflect on the consequences of their behaviours and take action for positive change.

The funds of knowledge (Moll et al., 1992) perspective that sits within the framework of Vygotsky's theory of learning as a socio-cultural process, enabled me to appreciate that the wealth of knowledge that participants acquire in their social relationships can be key to understanding their cultural identity, as well as learning potentials in the classrooms. This view enabled me to explore participants' existing knowledge and understanding of the topic under discussion and use them as a pedagogical base for learning and teaching of sustainability in the early childhood setting. Finally, the last theoretical perspective, ethics of care, highlighted reciprocity in participants' social

relationships that enabled me to focus on their caring relationships with each other, and with their natural environment, and how knowledge was co-constructed.

The ways in which these three theoretical perspectives have shaped this study will be further discussed in the following two chapters where Chapter Five will focus on the methodology and research design for this study, whilst Chapter Six will focus on the research setting, data collection methods and analysis.

Chapter Five: Methodology and research design for the study

In this chapter, I first discuss the importance of educational research and its relevance to this study. To provide a transparent account of the research process, I introduce the methodology adopted for this study and clear rationale for its choice in answering the research question:

- How can teaching and learning activities be shaped to promote better knowledge and practice of ESD within an early years setting?

Educational research is "a deliberate, planned, intentional activity" (Coe, 2017:11) with specific question(s) that provide its focus and direction (Mukherji & Albon, 2018). It is also transparent when its aims, methods, assumptions, arguments, data and claims are explicitly and clearly stated (Coe, 2017). Findings and justifications for them must be clearly disclosed in ways that minimise misinterpretation and with the aim of adding to existing knowledge (ibid.). It is to these definitions that this study aspires.

I have approached this research from an interpretivist paradigm that seeks to explore and explain how people make sense of their social world (Hughes, 2010). I needed to explore how individuals give meaning to their actions through their interactions with others and their environment, between existing knowledge and beliefs as well as new knowledge and experiences (Vygotsky, 1978; Yilmaz, 2008; Blaikie, 2007). The understanding that participants make sense of their world through previously constructed knowledge implies that they are intellectually generative individuals with the capacity to pose questions, solve problems and construct theories rather than being empty vessels that are waiting to be filled with knowledge (Moll, 1990; Yilmaz, 2008). This way of meaning-giving or knowing is referred to as *constructivism*, a view where individuals are assumed to construct their own meanings that can be either individual – referring to meaning-giving activity to cognitive processes of the individual mind; or a social process (*social constructivism*) - that focuses on inter-subjectively shared knowledge and meaning-giving that is social rather than individual (see previous chapter; Blaikie, 2007). It is to the latter description – *social constructivism* – that this study subscribes to.

My adoption of this approach to research rests on the theoretical framework adopted for this study that individuals construct knowledge through interactions with others in

a social context. This led me to adopt a qualitative methodology design that provides the guiding light in my consideration of issues such as choice of research topic, my research questions and ways of gaining answers to them, who to involve and why involve them, in the research process (Coe, 2017). In the attempt to gain understanding of how sustainability can be promoted in the early years setting, it became necessary to co-construct meanings and understanding of the concept of sustainability as well as events with the practitioners and children of the setting who all played active roles in the creation of meaning. In doing this, I showed how the curriculum and practice in educational settings needs to be based on developing learners' thinking, and that the positioning of intellectual authority rests neither upon the educator nor the resources provided, but in the discourse facilitated by both educators and learners (Vygotsky, 1978; Noddings, 1984; Yilmaz, 2008).

I considered this view and it laid the foundation for my adoption of action research as a design for data collection. After a consideration of the research design and process, I examine my own role as a researcher whilst exploring some ethical issues such as informed consent and confidentiality. The reliability and validity of action research are also discussed.

5.1 Qualitative methodology and rationale for its adoption in the study

I concur to the view that qualitative research is a field of enquiry in its own right (Denzin & Lincoln, 2005). Hence, to produce convincing answers to my research question, this study called for a qualitative methodology as it focuses on the way participants in the study interpret and make sense of their ideas and experiences in the world in which they live (Vygotsky, 1978; Moll et al., 1992; Hughes, 2010; Savin-Baden & Howell Major, 2013). It is based on a naturalistic, participatory mode of enquiry that disclosed the participants' experiences as the focus of exploration (Merriam, 1998; Bogdan & Biklen, 2007; Mukherji & Albon, 2018).

This study took place in an early years setting where I was immersed for a period of two years, as I subscribe to the view that action is best understood when it is observed in a setting in which it occurs. I gained deeper insights into participants' lives, circumstances, behaviours, how they see the world as well as how they make meanings of it (Bogdan & Biklen, 2007; Savin-Baden & Howell Major, 2013). This enabled me

to build a complex, holistic picture, analyse words, as well as report detailed views of participants, all of which provided direct sources of data for the study (Bogdan & Biklen, 2007; Creswell, 2009; Mukherji & Albon, 2018).

In conjunction with practitioners in the setting, I was the primary instrument for data collection in this study. We jointly collected data for the study from multiple sources using different techniques (observations, documentations from interviews, field notes and personal reflections) that are sensitive to underlying meaning (Merriam, 1998; Bogdan & Biklen, 2007; Savin-Baden & Howell Major, 2013). The data were then analysed and interpreted to identify characteristics, patterns and meanings of human phenomena to describe and understand, rather than to predict and control.

To show respect to all participants, act ethically towards them and where appropriate, engage them as co-researchers, was equally important (Savin-Baden & Howell Major, 2013). This enabled effective collaborative working which had the potential to support both practitioners' and children's learning for sustainability as well as for data collection that are central to meaning-making and the final thesis.

Theoretical perspectives that were adopted for the study have helped to uncover meanings that participants attribute to different phenomena and actions (Bogdan & Biklen, 2007; Mukherji & Albon, 2018). Themes were developed from data collected as opposed to those that were identified before commencement of the research. Theory that is developed through this practice is viewed as the 'bottom up' rather than the 'top down' as evidence is derived from various interconnected elements and, therefore theory is grounded in the data (Bogdan & Biklen, 2007; Mukherji & Albon, 2018).

In presenting this study in a narrative form, I relied on descriptions that contain all the information needed for readers to understand events and to convey meaning (Siraj-Blatchford, 2010). I also placed emphasis on words rather than quantification in the collection and analysis of data by focusing on process, meaning and understanding, gleaned from words and pictures to describe what I have learned about a phenomenon. (Merriem, 1998; Bogdan & Biklen, 2007; Bryman, 2012 and Savin-Baden & Howell Major, 2013; Mukherji & Albon, 2018). This final thesis, therefore, presents detail, context and emotion, in addition to the webs of social relationships of the participants where the voices, feelings, actions and meanings of interacting individuals are heard (Savin-Baden & Howell Major, 2013). Thus, the findings contain many direct

quotations using participants' own words from interview transcripts, field notes and audiotapes, to substantiate claims (Merriam, 1998; Bogdan & Biklen, 2007).

5.2 The research design

Research design involves the collection of data and organising it within the study, with the aim of supporting unambiguous conclusions to the problem being investigated (MacNaughton et al., 2010; Munn-Giddings, 2017). I carefully considered the research design to maximise opportunities for generating evidence for the purposes of providing answers to the research questions (Gorard, 2013). I aimed to involve participants who were seeking to improve their knowledge and understanding of education for sustainable development as well as explore ways of promoting sustainability skills, attitudes and values in the early years. This led me to adopt an action research framework to shape my investigative processes.

I invited the practitioners as co-researchers in this study to enable us to work collaboratively in co-constructing knowledge of sustainability with the children. We did this by focusing initially on a wildlife gardening project as the basis for learning for sustainability. The action research design enabled us, as a team, to co-develop ideas on sustainability and carry them out with children in the setting. Thus, action research encouraged participation and collaboration among the nursery staff (with children and parents) and myself to help transform the setting's educational practices enabling both 'action' and 'positive change' (Creswell, 2012).

5.2.1. Action research (AR)

Action research has a long history in education and community development, with various definitions and some common themes to discern both its core characteristics and distinction in relation to other research approaches (Munn-Giddings, 2017). Lewin (1946) described it as a way of generating information about diverse types of intergroup problems faced by various communities leading to social action. A similar definition provided by Elliot (1991) described it as "the study of a social situation with a view to improving the quality of action within it" (p.69), and this is with the fundamental aim of improving practice rather than producing knowledge. Mills (2018) views action research design as a systematic procedure that researchers use to gather

information as well as to improve practice in educational settings; whilst Creswell (2012) asserts that action research is a process used for addressing a specific practical issue with the aim of obtaining solutions to the problem. Finally, action research is viewed as a collaborative and democratic partnership as researchers see themselves in relation with others, in terms of their practices and ideas, and with the rest of their environment (Coghlan & Brannick, 2014).

Action research is usually based in practice or a community, and hence, not separate from it (Munn-Giddings, 2017). I engaged with practitioners as co-researchers in this study, and this made data collection methods collaborative and democratic, rather that solitary as we were all focused on the co-creation of knowledge of practices with one another (McNiff & Whitehead, 2011; Taylor, 2010; Creswell, 2012; Stringer, 2014). Action research also works on the assumption that all those whose lives are affected by the issue under study should be engaged in the processes of investigation (Stringer, 2014). Studies like those of Prince (2010) and Ward (2014) (see Chapter Three) demonstrate that knowledge acquisition through action research is a collaborative process that enabled practitioners to develop better understandings of issues that are under focus through equitably sharing diverse knowledge and experience, to improve the quality of their practices (Ritchie, et al., 2010; McNiff & Whitehead, 2011; Stringer, 2014).

The process of collaborative enquiry with practitioners in this present study enabled us to develop better understanding of the concept of sustainability as we jointly and systematically planned for and implemented activities for the children in the setting. As we carried out these tasks, we jointly reflected on information that transformed our understandings of the issues (theorising). Based on these understandings, we developed plans for action which provided the context for testing hypotheses derived from group theorising (evaluation). This makes action research one that focuses on research *in* action, rather than research *about* action (Coghlan & Brannick, 2014).

My adoption of action research design for this study also draws inspirations from ideas of values, ethics and politics from praxeological research that is fundamentally participatory, democratic and collaborative in its nature, and is best practised by those committed and close to real worlds of children and their families (Pascal & Bertram, 2012). There was a redistribution of power in the generation of knowledge evidenced

in the ways that practitioners and children and all those involved in the research were encouraged to be in control over their own lives and contexts through active participation and having their voices heard in decision-making.

In addition, AR like praxeological research, has at its heart a process of critical self-evaluation, reflection and action base to support participants in developing better understandings of their practice for improvement (Pascal & Bertram, 2012). Within this context, my role as a researcher in this study became more facilitative and less directive, as I engaged people who have previously been the 'subjects' of research as participants in the research process (Stringer, 2014). I was also part of the context being investigated, as I did not adopt a spectator approach or conduct experiments on the participants (Kemmis & McTaggart, 2007; McNiff & Whitehead, 2011). Even though this kind of relationship is not without its challenges due to the complexities of issues relating to professional practice (Mukherji & Albon, 2018) (also see Chapter Ten for discussion on this aspect), I managed to build and maintain close relationships with them to the point of being accepted as part of the nursery team (Blaikie, 2007). This enabled me to carry out research *with* practitioners and children, rather than *on*/*about* them, acting as a catalyst/facilitator as and when necessary regarding actions to take.

Action research plays an important role in the preparation and professional development of educators as it equips them with specialised knowledge and skills needed to effect positive change in children's learning for sustainability in early years settings (McNaughton, 2012; Hine, 2013; Hirst, 2018). This was seen in the ways that practitioners learned alongside the children in reviewed studies (see Prince, 2010; Ogelman, 2012; Ward, 2014 and Hirst, 2019, in Chapter Three).

Practitioners' systematic, collaborative and participatory process of enquiry addressed areas of concern in relation to ESD as it continually alternated between enquiry and action in the setting with a view towards improving practice (Creswell, 2012; Pascal & Bertram, 2012; Hine, 2013). The action research design of the study was conceived as a cyclical process of three phases which enabled the team to plan, act, observe and reflect on the processes that enabled planning for children's learning to encompass the four dimensions of sustainable development as adopted in the study. This process is shown in the diagram below:

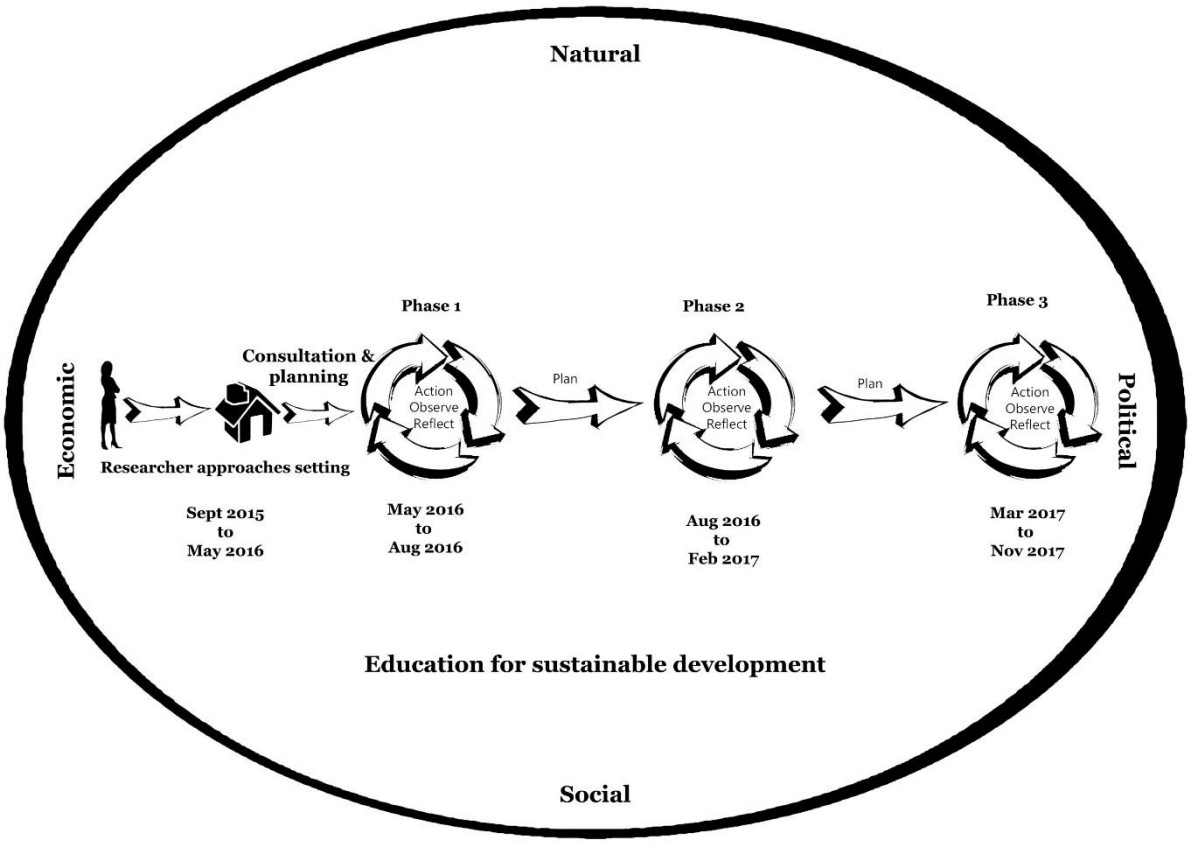


Diagram 5.2.1: A representation of the action research design for the study

5.2.1.1. Description of the three phases:

Planning for the action research project commenced in April 2016. During a consultative process at a staff meeting on the 14th April 2016, I sought practitioners' contributions and ideas about how best to support children's understandings of sustainability. All 16 practitioners were in attendance, and the suggestion by one of them to plant wildflower seeds was unanimously agreed by all the other practitioners, and this enabled planning for Phase 1 to begin with learning about sowing seeds to grow a wildlife garden with the aim of attracting bees - an important issue in sustainable development (Friends of the Earth, 2018; UNESCO, 2018; Weldemariam, 2019). We agreed that the wildlife gardening project would be one of the ways that participants' knowledge and understandings of sustainability would be drawn upon, and that other aspects of sustainable development were expected to be developed from the gardening project over the two years.

The consultative process that started the action research process in this study demonstrated democratic partnership as I saw myself in relation with the practitioners in terms of their practices and ideas as well as with the children and the environment (Coghlan & Brannick, 2014; Munn-Giddings, 2017). We also worked collaboratively with the children in the setting by being attentive to their needs and discoveries as they interacted with their peers, adults and their environment.

5.2.1.2 Phase 1: 'A garden for the bees' (May 2016 - August 2016)

The developed plan was put into action by practitioners and children suggesting the types of flower seeds to grow. Before commencement of sowing the seeds, I prepared the designated patches for planting in the garden, along with some old and used tyres kept near the nursery doors. Sowing was planned for when the children would be outdoors in the garden for play time. On the appointed day – 19th May 2016 - practitioners on duty in the garden and myself engaged the children in sowing the seeds, whilst at the same time ensuring their health and safety. We provided water for the children and they were enthusiastic as they used brightly coloured children's watering cans to help water the seeds in the planting areas. This led to further regular collaborative caring for the garden, specifically planned for when children came out for their outdoor play opportunities in the garden. We all ensured regular watering of the planting areas. Many of the actions with the children and practitioners were planned, whilst others were spontaneous, arising from practitioners' and children's interests, observations and new insights from data collected by the team.

The topic of bees was suggested by the practitioners, based on their perception of the children's interests from conversation with them. Bees are important for sustainability in that even though tiny, they are essential to a healthy environment and healthy economy (Friends of the Earth, 2018). Humans' reliance on bees (and other insects like butterflies) for pollinating fruit and vegetables, highlights their essential role in a healthy ecosystem that provides most of our food production (UNESCO, 2018; Weldemariam, 2019). These insects and other pollen-carriers are estimated to be worth more than US$200 billion per year to the global food economy (UN SDG 15, 2015; UNESCO, 2018). With reference to the United Kingdom (UK), it is estimated that UK farmers would spend £1.8billion a year to pollinate their crops without bees (Friends of the Earth, 2018). Bees are under threat of extinction due to climate change, changes

in land use, habitat loss, building projects, disease, pesticides, farming practices, pollution, and invasive non-native plant and animal species. The urgent need to reverse damage to the environment to ensure stable economy and food supply by protecting bees as key players in the economy (Friends of the Earth, 2018; Weldemariam, 2019) makes it important for everyone to be well informed about bees. This meant that we needed to build knowledge of their roles and capacities, in ways that supported relational understanding of the place of bees within our ecosystem.

The first phase ended in August 2016 and was rounded up with a staff meeting held on the 15th August 2016. The meeting enabled us as a team to listen to each other's views and reflect on actions taken with the children, whether those actions have worked and whether there was need for adjustments. Nine practitioners attended the meeting, as others could not attend due to reasons ranging from holiday (as the meeting was during the summertime) to their work preferences. All practitioners in attendance agreed that the outcomes in Phase 1 had been successful. They had observed the children's enjoyment of caring for the garden through their eagerness to help with watering as well as their observations of the stages of growth of flowers. Space for evaluation and reflection enabled future co-planning of activities for the children. For instance, a child's request to plant sunflowers at home just like he had been planting in the nursery, led to a purposefully planned individual planting of sunflower seeds in newspaper flowerpots for children to take home and nurture. Practitioners were also involved in observing, documentation and collecting data relating to the research.

5.2.1.3. Phase 2: 'Literary and practical activities' (August 2016 - February 2017)

Phase 2 saw the development of activities that were either planned or arising from children's interests. These included the use of children's books for specific activities, and food waste recycling. By this time, practitioners had grown in confidence and they had started feeling comfortable working with me as well as learning about sustainability. They made suggestions about activities to carry out with the children as well as sharing observations and documentation with me.

The second phase ended in February 2017. This was similarly rounded up with a staff meeting on the 21st March 2017 which provided opportunities for practitioners to

discuss the success or otherwise of the actions taken. The forum also provided opportunities for reflections and evaluation of this phase.

5.2.1.4 Phase 3: 'Bees, bees and more on bees' (March 2017 - November 2017)

The final phase was also designed to enable the team to work collaboratively to implement activities that had either been suggested or that arose from the children's interests like the individual planting of sunflower seeds and learning more about bees. Just like in the previous phases, practitioners were involved in the data collection process as they continued with their observations on the children during activities, as well as analyse and reflect on their actions. They were able to provide detailed reports from observations on children's interactions with each other, adults and their environment.

The final phase ended in November 2017 and was rounded up with a staff meeting on 6th February 2018. The meeting provided opportunities for the practitioners to discuss outcomes from the activities undertaken with the children, as well as their personal learning in the action research.

5.3 Relevance of the theoretical framework to the methodology

The research process, especially shown in the way I worked with the participants in this study, fits in with the theoretical framework adopted for the study. Participants gained knowledge and understanding of their world through social interaction as they worked together to co-create knowledge and understandings of sustainability.

The funds of knowledge theoretical perspective, for its part, was evidenced in the research process such as in my acknowledgement of my own knowledge and understanding of sustainability developed from the literature review and in my family life, and those of the practitioners and children that have been developed through their interactions in family lives or elsewhere. Our existing knowledge and understanding offered a firm pedagogical basis for learning about sustainability such as in the ways that we capitalised on children's funds of knowledge about gardening and bees to plan for their learning about sustainability.

The third theoretical perspective, ethics of care, enabled me to gain better understanding of research relationships and building active and collaborative relationships between two professional groups i.e. practitioners and myself as the researcher (Bergmark, 2019). This collaboration, however, raises questions on the hierarchical power positions and responsibilities that follow the positions. Working with the practitioners within an ethics of care enabled me to see the need for reconsidering the power relations and responsibilities in these situations, as I deem myself and practitioners to represent different professions with distinctive competences that can be useful in research and in teaching. Based on this realisation, the roles of caregiver and cared-for are not defined symmetrically as they are an asymmetrical relationship (such as those between teachers and students). This therefore makes the position of researcher-practitioner relationships dependent on specific situation and competences with their mutually giving and receiving care, as doing otherwise might result in asymmetrical relationships (Bergmark, 2019).

Adopting the ethics of care perspective enabled me to promote more symmetrical relationships between myself and the practitioners by inviting them as co-researchers in the study. This action enabled us to show interest in each other's views and perspectives, in addition to constantly discussing and reflecting on expectations for one another throughout the duration of the study.

Ethics of care also enhanced caring relationships between practitioners and children, among children themselves, as well as between children and their environment, as shown in the ways that participants show care to one another by being attentive to each other's needs. Finally, the ethics of care perspective is shown in the ways that the content of the study was organised around themes of care which encouraged practitioners to promote values related to sustainability to the children.

5.4 Research ethics

Issues of ethical principles, or more specifically, transgressions of them in research, usually focus on whether there is harm to participants; lack of informed consent; whether there is invasion of privacy or if deception is involved (Diener & Crandall, 1978; Hammersley, 2017; British Education Research Association (BERA), (2018). These issues also link with the view of ethics of care as a moral issue in research as I

thought it important to ensure that that the research is morally acceptable, and that ethical issues such as concerns for participants provided the basis for continuous reflection on my part throughout the project, starting from its design and topic, gaining access to the participants, data collection and analysis, report writing and final dissemination of research findings (Noddings, 1984, 1988, 2013; Basit, 2010; The British Association for Early Childhood Education, 2011; Hammersley, 2017). I also paid great care and attention to all participants, being sensitive to their individual characteristics such as gender, race, ethnicity, social class or disability, amongst others, at every stage of the study, whilst still being able to carry out quality research at the same time (ibid).

The nature of the topic of ESD is important for children as participants in this study, particularly as it is meaningful and engaging to them, and important aspects of their experience are the objects of the research (Smith, 2011). The topic of this study – education for sustainable development (ESD) – is worthy in its own right because it is an important aspect of participants' lives, as it has enormous potential to enrich their well-being for now and in the future. Educating children for sustainable development in this respect will enable them to make decisions that are based on benefits to themselves and for others, both for now and in the future and put those decisions into practice (UNESCO, 2005; see also Chapter Two, Sections 2.4 and 2.5).

I conformed to the ethical standards set out by Anglia Ruskin University by carefully following the procedures and ethical conduct expected for the duration of the project such as completing the 'Ethics 1: Good Research Practice' and the 'Introduction to Research Ethics and Integrity in Human Research' training courses (Epigeum, 2019). As of utmost importance, permission to carry out the study was sought from the university by making an application to the University Faculty Research Ethics Panel (FREP) and written approval was granted before the data gathering process began (see Appendix 3).

To gain access to the chosen nursery, I arranged a meeting with the nursery manager after an initial phone call, to seek her cooperation as well as to inform her of the requirements of my project. I followed up this meeting by sending the manager an email asking her for formal written permission which she granted to me in a letter (see Appendix 4). I needed this letter to gain access to the project participants as well as to

fulfil part of the requirements of the FREP which required formal written consent to be obtained prior to data gathering. Subsequently, regular weekly visits to the nursery enabled me to familiarise myself with the children and other practitioners as well as to start making initial plans for the study with them.

5.4.1 Practitioners' and parental informed consent

Gaining practitioners' informed consent was a paramount consideration for me, as this entailed making sure that they were fully informed about the overall purpose of the study, its design as well as the possibility or otherwise of risks/benefits which may arise from their participation (Brinkmann & Kvale, 2015; Mukherji & Albon, 2018). To support their informed decision to participate, verbal and written information about the project was given to them. Practitioner Participant Information Sheets (PPIS) (see Appendix 5) that set out general information about the research project were given to all the nursery practitioners. Hence, the PPIS provided practitioners with information about the process in which they were to be engaged, explained why their participation would be valuable, how it would be used, how and to whom it would be reported, as well as the right to withdraw without penalty. This process is a requirement that is central to ethical guidelines (Hammersley, 2017; BERA, 2018).

All 16 practitioners signified their agreement to take part in the study by signing the consent forms. I explained the contents of the PPIS to them during individual meetings before the commencement of the project, thus providing opportunities for them to clarify issues or voice any concerns about the project. This process highlights the critical ethical act of ensuring that the recruitment process did not pressurise participants to take part in the study (Harcourt & Conroy, 2011). I aimed to maintain this attitude throughout the duration of the study (Cornwall & Jewkes, 1995; Mortari & Harcourt, 2012), evidenced through my relationships and actions with all participants.

I also sought parental consent for the children's participation in the study. I prepared Parental Permission for Children's Participation in Research (PPCPR) letters (see Appendix 6) that also set out general information about the project such as why the children's participation was important, how information would be gathered and how it would be used, how and to whom it would be reported. The parents were also made

aware that they had the right to withdraw their children from the project at any time without penalty and that their wishes would be respected. The initial briefing and debriefing of participants were through the Participant Information Sheets and Parental Permission for Children to Participate in Research Letters sent to the participants. I collected sixty-seven signed parental consent forms over the period of two years. This meant that even though all children participated in the research and observations were collected by the team, data that were used for the project related to those children whose parental consent forms were received.

5.4.2 Children's informed consent

Obtaining parental consent for children's participation in the research study was not enough and I thought it necessary to include an information leaflet for the children (see Appendix 6) with the PPCPR letters. The leaflet was a child-friendly letter in a story form that explained the nature of the project (Mackey & Vaealiki, 2011), and included my photo and a few images that were applicable to the children (Twycross, Gibson & Coad, 2008) such as the nursery garden and pet rabbit, Reggie. I re-read this letter to the children on meeting them to seek their consent before commencement of data collection. This process was important as I understand that children as young as those in the setting lack the cognitive abilities to understand either the research process or my role to grant consent, in addition to their lacking legal capacity and authority to make decisions regarding their participation in research without adult consent (Te One, 2007; Harcourt & Conroy, 2011). I also understand that this means that they are usually excluded in decision-making regarding their participation in research as it is the parents or guardians who are often asked to give consent on their behalf (Basit, 2010; Smith, 2011; Mortari & Harcourt, 2012). This consent usually comes after the gatekeeping role of the nursery manager for ethical clearance, thereby rendering children and their informed consent as a secondary consideration or, as Mortari & Harcourt (2012) put it, not necessary to obtain. This process of first asking legally responsible adults for consent for their children's participation in research before approaching the children themselves for their assent, means that children only have a say after others have decided to give them that opportunity (Dalli & Te One, 2012).

Obtaining parental consent is an important consideration in research because it honours parental rights to safeguard their children. They have the right to know who their children come into contact with as well as what the research entails. Obtaining children's consent after their parents have given consent should not be seen as secondary or one that is not necessary to obtain as claimed by Mortari & Harcourt (2012). I therefore paid attention to ethical guidelines that reflect human rights principles as articulated by the United Nations Convention on the Rights of the Child (UNCRC) (1989). These principles, especially Articles 12 and 13 of the Convention focus on the right for children to be involved in decision-making processes as well as to receive and impart information in a manner that matches their self-identified competence (Mortari & Harcourt, 2012).

I gave special considerations to children's rights to be promoted prior, during and beyond the research process (Bell, 2008). I respected their wishes by re-affirming their initial consents at every stage of the data-gathering process for indications that they might want to withdraw from the research (Alderson, 2005; Bell, 2008). I also acknowledge that children should be able to deny participation even if their parents have given their consent by accepting that their consent is not a one-off decision (Harcourt & Conroy, 2011). I was constantly vigilant to their responses, listening to and observing their verbal, and specifically non-verbal clues that are more useful ways of getting agreement as they transcend language and ability (Cocks, 2006). Even though Cocks' (2006) study focused on exploring and identifying the peer culture of children with moderate to severe learning impairments, his suggestions on gaining children's agreement to participate in research can be extended to children as young as those who are participants in this study. I therefore invested a lot of time and efforts to know the children and understand their unique ways of communication. This was to help me to know when to unfold my 'ethical radar' (Skånfors, 2009:1) at the appropriate time. This enabled me to understand their behaviour through subtle clues such as not responding to questions, pulling away, ignoring my presence, or in some cases, crying on sighting me. Children's actions such as these were observed during the study as some children who were usually the most eager to participate in the research activities sometimes pulled away and carried on with other activities. Their actions were respected at those points in time, and they were not encouraged or in any way forced to participate.

Before I commenced data collection, I made regular visits to the nursery for nearly seven months and took part in some of the children's activities such as reading stories to them and playing with them whilst outdoors. This was to enhance my being totally accepted by the participants, especially the children (Basit, 2010). I aimed for a friendly and gentle approach with them to help build relationships (Mortari & Harcourt, 2012) and it was rewarding as I got to know both practitioners and children to the extent that they began to feel at ease with me. Establishing a research relationship was a critical consideration for me as I intended to work *with* the children rather than *on* children (Harcourt & Conroy, 2011), as well as the practitioners. I therefore needed to establish trust and security with prospective participants as they needed to share their lived experiences which might later become part of a wider and more public discussion (Mortari & Harcourt, 2012).

5.4.3 Participants' confidentiality

In any research study, participants' confidentiality is of utmost importance (Creswell, 2014). Participants' confidentiality was ensured by compliance with the setting's Confidentiality Policy. Further discussions with the nursery practitioners on how best participants' privacy could be maintained led to the use of pseudonyms or 'child, male/female' for participants to protect their identities. Manual files such as paper documents – reports, diary entries, children's work and photographs – were locked up securely in my drawer and personal computer at home. Whenever I used the university's computer or the university's remote application for my work from home, this was also password protected.

5.4.4 Potential risks to participants

To minimise potential risks to the participants in the project, all interactions with them took place within the nursery setting. As part of the research requirements from Anglia Ruskin University, I applied for clearance through the Disclosure and Barring Service (DBS) and confirmed my suitability to work with children and all those who were involved in the project. I made the report available to the nursery to copy for their file.

There was an undertaking which the participants were encouraged to sign prior to the take-off of the project. This is on the PPIS for the practitioners and the Parental Permission for Children to Participate in Project Sheets.

5.5 Summary

In this chapter, I have provided explanations for my choice of research methodology which aligns with my belief about how individuals construct knowledge through interactions with others in a social context such as the nursery setting in focus, based on the theoretical framework adopted for the study. The theoretical framework has helped in shaping the ways that I approached the research topic; the research questions and ways of gaining answers to them; who I involved (the participants) and why I involved them whilst paying attention to issues of ethics. Using the ethics of care (Noddings, 1984, 1988; 2012, 2013) as one of the theoretical perspectives enabled me to explore and gain better understandings of my relationships with the practitioners within an action research. I considered my role as an action researcher as one that comes with a huge responsibility. This made me see the need to balance my familiarity with the participants with the risk of making assumptions about their understanding rather than reporting their actual experiences. I have also shown awareness of how my position as a participant-observer could influence my exploration of issues, as well as how I have aimed to minimise this influence by adopting a democratic and inclusive approach in my research design and interactions with the participants.

The action research design also fits in with the theoretical framework that I adopted for this study. It fostered positive working relationships and productive communication styles among participants as the processes brought together diverse people with diverse values to work harmoniously and productively to achieve set goals. They acquired individual capacity to engage in systematic research through their participation, and they were able to build a supportive network of collaborative relationships within the setting.

The discussions in the following chapter (Six) will focus on the more tangible aspects of the research. It will describe the setting, the participants and methods of data collection. This is in addition to the approach taken to data analysis.

Chapter Six – Research setting and methods

In this chapter, I discuss the research setting that serves as the context for this study. As my aim was to explore the ways in which teaching and learning activities can be shaped to promote better knowledge and practice of ESD within an early years setting, the day nursery was the naturalistic setting for the research – a place that the children attend regularly. To this extent, there was not much deviation in what the children and practitioners usually do, or who they are usually with during the study (Mukherji & Albon, 2018).

I also discuss the research participants in this study, data collection methods and rationale for their adoption and I provide explanations for the approach that I have taken to analysing data. I end discussions in this chapter with issues of reliability and validity of action research as applicable to this study.

6.1 The research setting

The research setting is a day nursery situated in one of the towns in the south east of Essex county, England. The town has a number of areas of deprivation with one of the lowest percentages of children who are deemed ready for school. It also has a high rate of children in care for England. The nursery is located within a purpose built Sure Start Children's Centre established in 2004 and is on the Early Years Register and the Compulsory and Voluntary parts of the Childcare Register. It is run and managed by the Early Years Alliance, a registered educational charity, with a vision that every child in society enjoys the same opportunity to learn through play. The nursery serves the local area and is accessible to all children, providing state funded early education places for two-, three- and four-year-old children. It also supports a few children who speak English as an additional language and children with special educational needs and/or disabilities.

The nursery has capacity for 50 children per day and operates from two playrooms – one room that accommodates 38 children aged two-to-four-year olds; and a second that accommodates 12 children of between one-and-a-half months (six weeks) old to two years. In addition, there is an enclosed area available for outdoor play which children can access at stipulated periods during the day.

The nursery operates 10 sessions in a week – five mornings sessions and five afternoon sessions. Children's attendance patterns in the nursery vary, and this can be attributable to the government funding pattern. As stated in Chapter Two, at the start of this project, all three- and four-year old children in England can access 15-hours of government funded childcare per week. Access to free childcare starts from the term after their third birthday. As a result, some of the children attend sessions for either two or three days per week, whilst others who are funded attend just mornings or afternoons only (and only during term time). Entitlement to the 15 extra hours to make up the government's 30-hours funded childcare places for working parents of three- and four-year olds is dependent on household income i.e. means tested. Two-year-old children can also access the 15-hours of government funded childcare, and this also depends on household income as well as if the particular child is a looked-after child; is receiving Disability Living Allowance; has a statement of Special Education Needs or an Education, Health or Care Plan; or the child has left care under a Special Guardianship Order, Child Arrangements Order or Adoption Order (Department for Education, 2018; Education & Skills Funding Agency, 2018; Essex County Council, 2018).

The nursery's mission is to help children to succeed and to create the childcare which families need in addition to building learning communities. This mission, coupled with the vision to remain a place that completely portrays the meaning of the word 'nurture' as in its dictionary meaning of: to feed, nourish, nurse, tend, discipline, educate, instruct, rear, give schooling tuition and attention; ensures that children feel safe, loved and important and always protected from harm (Nursery's Mission Statement and Vision, 2018), aligns with the ethics of care that I have adopted for this study. In the most recent inspection of the nursery by the Office for Standards in Education (Ofsted) in November 2017, the nursery was graded 2 (Good). The nursery opens throughout the year with opening hours currently from Monday to Friday (8 a.m. to 6 p.m.) for 51 weeks of the year, except for Bank Holidays and 3 staff training days (Nursery's Ofsted Report, 2017).

6.2 The research participants

A key decision point in any qualitative research rests on the purposeful selection of people who could potentially be informants for the research (Creswell, 1998; Bryman, 2012, Matthews & Ross, 2010; Savin-Baden & Howell Major, 2013). To gain answers to the research question, it was important to select appropriate participants: practitioners and children aged 2-4 years in the selected day nursery. Choosing a single nursery for the study enabled me to gain deeper understanding of the setting and the participants to enhance my focus of the study (Savin-Baden & Howell Major, 2013). I also chose the nursery for my project as it is located within my community, and thus fits in with the topic of sustainability as it enabled me to focus on gaining awareness, understanding and connectivity with my locality. I also feel a connection with the nursery as one my children attended the nursery 14 years ago. However, only one member of staff from the time my child attended remains with the nursery. The nursery provided my child with excellent quality care and education which carried her successfully through primary school into secondary school.

The nursery currently employs 16 members of childcare staff, all female. Of these, 12 hold appropriate early years qualification at Level 3, two members of staff hold appropriate qualification at Level 2, whilst the remaining two are working towards appropriate Level 2 qualification. Other nursery staff include an administrator, cleaner and a cook. The childcare practitioners have between 1 and 17 years of experience working with children.

I interviewed 10 of the 16 childcare practitioners in the nursery, including the deputy manager. This occurred after I had made an informal request to all practitioners. The table on the next page provides some basic details about participants' workplace experiences as at the time of my initial interviews with them in March 2016:

No	No of years I have worked with children	No of years I have worked at this nursery	Qualifications
1	5 years	4 years	Level 3 BTEC HSC
2	8 years	8 years	Level 3 NVQ in CCLD.
3	5 years	Over 3 years	Level 2 NVQ in CCLD.
4	15 years	Nearly 2 years	Level 3 NVQ in CCLD
5	1 year	1 year	L3 Diploma for Early Years Workplace
6	4 years	6 months	Level 3 NVQ in CCLD
7	7 years	3 years	Level 3 NVQ in CCLD.
8	6 years	6 years	Level 3 NVQ in CCLD.
9	17 years	10 years	Level 3 NVQ in CCLD
10	5-6 years	5 years	Level 3 NVQ in CCLD.

Table 6.2: Information about interviewed practitioners

From this table, it can be seen that there is a low staff turnover at the nursery despite practitioners' high qualifications. This is surprising in the face of a recent survey by the National Day Nurseries Association that revealed that qualified nursery practitioners are being lured away by more attractive retail jobs with improved pay and fewer responsibilities (McAlees, 2018; Government Business News, 2019). The low staff turnover rate at the setting could imply practitioners' enjoyment of their roles as carers for children's well-being, as well as positive personal benefits of their experiences gained from working with others within the setting.

There were 68 children (27 boys and 41 girls) at the commencement of the study in September 2015. As the study took place over a period of two years, there were changes in the dynamics of the children. This meant each time some children left for the reception classes in 2016 and 2017 respectively, new children were welcomed into the setting. Information regarding these changes can be seen on the next page:

Information about children	Number	Boys	Girls
Children aged 2-4 years in nursery as at September 2015	68	27	41
Children who left nursery for Reception classes by September 2016	31	15	16
New children aged 2-4 years who joined nursery by September 2016	19	10	9
As at September 2016, total number of children aged 2-4 years in the nursery setting	69	31	38
Children who left nursery for Reception classes by September 2017	34	16	18
New children of 2-4 years who joined nursery by September 2017	14	5	9
As at September 2017, total number of children aged 2-4 years in nursery setting	61	26	35

Table 6.3: Changes in dynamics of child participants during the study

Over one hundred (100) parental consent forms were given out to parents during the study, but only 68 (sixty-eight) forms were returned completed. Despite this development, activities were planned and implemented for all 101 children of 2-4 years of age who attended the sessions as part of the learning experiences on offer in the setting during the research period. Data for the study were collected only from the 68 children whose parental consent forms were signed and returned.

6.3 Methods of data collection

Data collection is a series of interrelated activities that are designed for gathering relevant information relating to the research questions (Creswell, 1998). In deciding on the data collection methods for this project, I invited suggestions from the practitioners on the best ways to capture data. The data collection methods that were adopted were chosen, discussed and agreed with the practitioners during meetings from my initial visits to the nursery prior to commencement of the project. These methods were necessary as over-reliance on one type of data collection method in any research could lead to biases (Morrow, 2009).

It is important to stress that the practitioners were actively involved in the data collection process. The data collection methods therefore relied heavily on the team's social and interpretive skills and on vernacular methods of enquiry that enabled us to report participants' conversations, describe their actions and locations as well as present these reports in narrative form (Walker, 2017). I have also linked these methods of data collection to the senses as will be shown in my discussions.

6.3.1 'Pedagogy of listening'

The main method of data collection adopted for this study was listening to the participants, based on the 'pedagogy of listening' – the listening perspective from the Reggio Emilia approach to early childhood education. Reggio Emilia is a city in the Emilia Romagna region of northern Italy. The Reggio image of the child is that of a rich child who is active, with rights, and who has extraordinary potentials to excel as well as the ability to express themselves in a hundred languages (Rinaldi, 2005; 2006) such as through drawing, painting, acting, and singing, amongst others.

The team adopted the 'pedagogy of listening' to capture children's and adults' voices through their everyday conversations (dialogues), questions and questionings – techniques used to generate active engagement. Reggio Emilia educators believe that children's learning is situated in a socio-cultural context and takes place in inter-relationships that require the construction of an environment which fosters movement, interdependence as well as interaction. This belief is based on the socio-cultural perspective that views knowledge as constituted in a social context through a process of meaning making where children continually interact with other people and their environment (Vygotsky, 1978; Rinaldi, 2006). As children interact and co-construct knowledge with others, the pedagogy of listening becomes key to finding out what they know (their funds of knowledge), as well as to how they make sense of their world (Moll et al., 1992). Listening is the premise for any kind of learning relationship, and this is best achieved when participants listen attentively to one another, a view that also aligns with the ethics of care (Noddings, 1988). The essence of listening in learning is that it is reciprocal as it occurs in a 'listening context', where one learns to listen, and individuals are enabled to talk and present their theories, offer their own interpretations of events as they understand them. Listening is also emotion because it

is generated by emotions, influenced by the emotions of others as well as stimulates emotions (Noddings, 1988; Rinaldi, 2006).

The socio-cultural perspective of Reggio Emilia is consistent with Vygotsky's theory that was adopted as a theoretical perspective for this study. Participants interacted with one another and the environment to co-create knowledge and understanding about issues of concern to them through opportunities presented in the social context (the nursery) for interaction through open dialogue. In this context, the pedagogy of listening became an essential element in participants' caring relationship as they listened and were listened to in this study. The extended period of research made it possible for participants to get to know one another well for trust to develop. Listening fostered connectivity and practitioners in the study were able to meet children's needs because they were attentive to their emotions that arose from their experiences. Listening in the social context of the nursery entailed practitioners not just listening with their ears, but with all their senses. Listening played an important part in achieving the objectives of this project in the search for meaning in the nursery setting as we (the team) saw, felt, heard, smelt and even tasted some of the children's experiences whilst working with them.

I recorded some of my conversations with the children as we worked together and subsequently transcribed and securely filed the recordings. At other times, I did not record participants' conversations, but captured these through note taking. Practitioners were also involved in this process of listening and capturing children's voices. In my presentation of findings where children's comments have been used, it is important to acknowledge that it was not possible for me to represent every child's voice in this project and there were some children who were evasive and chose not to participate. It is also a possibility that it is only the voices of those children whose comments have been used to substantiate findings that will be presented

6.3.2 Documentation – 'visible listening'

Educators' ability to respond to the various ways that children express themselves enables documentation under Rinaldi's 'pedagogy of listening' to be viewed as 'visible listening' as it ensures listening and being listened to by others (Rinaldi, 2001). The team produced traces and evidence of children's learning such as notes, voice

recordings, photographs, feedback from families and children's drawings and paintings created with the children, to make visible the ways the children in the group were learning. Observation, documentation and interpretation of children's representations were therefore woven together and none of these actions could be separated out from the others. These documents represented a good source in this study as they were in the language or words of the participants (Creswell & Creswell, 2018).

By means of documenting, the team's thinking and our interpretation became tangible and capable of being interpreted, especially as we reflected on them as part of our collective process of knowledge building. These processes produced knowledge that was co-constructed and validated by its enrichment through the contributions and checking by many in the setting (Creswell & Miller, 2000; Rinaldi, 2001).

6.3.3 Interviews – 'talking, listening and seeing'

Interviews are the most common method of gathering data in qualitative research and this makes them an integral part of this study (Savin-Baden & Howell Major, 2013; Creswell, 2014). An interview is a conversation between two individuals in which one person, the interviewer, asks questions which are answered by the other person, known as the interviewee (Matthews & Ross, 2010; Savin-Baden & Howell Major, 2013). It is also a method where participants, in response to questions posed by an interviewer, verbally communicate information about their thoughts, behaviours of feelings (Crano, Brewer & Lac, 2015). Brinkmann & Kvale (2015) define an interview as:

"a conversation that has a structure and a purpose. It goes beyond the spontaneous exchange of views in everyday conversations and becomes a careful questioning and listening approach with the purpose of obtaining thoroughly tested knowledge" (pp 5-6).

I carried out specifically planned semi-structured individual face-to-face informal interviews with the practitioners at the start of the study before commencement of data collection. The interviews were different from naturally occurring everyday conversations (Cohen, Manion & Morrison, 2018), and they were used to explore practitioners' perceptions of ESD and how they are formed. I interviewed 10 of the 16 practitioners at different times and days at the commencement of the study. The remaining six could not be interviewed due to lack of time on their part, the occasional

busy schedules in the setting which did not allow for them to be away from the children for too long, or work schedules (as some of them are term-time only staff). For each interview, I found quiet and suitable areas such as the interview room and reading area indoors when the children were outdoors. I then defined the purpose of the interview and ensured practitioners' understanding of the situation. In addition to my knowledge and focus on the interview topic, I established good contact through attentive listening and showing understanding and respect for the participants (Brinkmann & Kvale, 2015; Cohen, Manion & Morrison, 2018).

The interviews enabled me to gain better understanding of the meaning that participants give to their lives (MacNaughton et al., 2010). Prior to these interviews, I developed a short interview guide to act as an agenda for the interview (Matthews & Ross, 2010) and for structure (see Appendix 8). The guide contained questions about how long they had been working with children in general, and in the setting in particular. It also included questions about their understandings of ESD; how their perceptions about ESD are formed; how they practised ESD initiatives in the setting based on their understanding of the concept; as well as asking for five words which described what ESD meant to them (Hill et al., 2014). These questions were used with all the interviewed practitioners and they enabled me to gain better knowledge of practitioners' understandings of ESD.

Despite the use of a guide, the interviews were characterised by open-ended questions that enabled practitioners to provide varied and in-depth responses. I asked the same questions of all the interviewees, but in different ways, based on individual characteristics (Matthews & Ross, 2010; Creswell, 2014). Each interview lasted between 10-12 minutes in the nursery setting, as the busy working days did not allow practitioners to spend long periods of time in discussions with me. I opted for the face-to-face interviewing method as it provided me with opportunity to explore participants' in-depth views on the subject of the study. Prior to the interviews, I had managed to build and maintain rapport with the participants through regular visits for over six months and this enabled me to probe into feelings that they may not have revealed in a group discussion or on paper (Creswell, 2009, 2014; Savin-Baden & Howell Major, 2013) such as access to their attitudes and values that cannot necessarily be observed or accommodated in a formal questionnaire. I was also able to observe

their body language, clarify ambiguous statements when they did not understand any questions, and to give them opportunities to clarify issues.

I carried out the interviews in a clear, polite, respectful, non-threatening and friendly way (Cohen, Manion & Morrison, 2018), and rounded up each one by summarising the main points of the practitioner's responses (Brinkmann & Kvale, 2015). I also asked if they would like to make any additions to what they had discussed, and when they declined, I informed them that all what they had discussed would be made available to them in a written form as soon as possible to demonstrate openness on my part.

I took the decision not to audio-record their responses as I observed from their demeanour when I asked if I could do so that they were not comfortable with the idea. The subtle messages I detected such as anxiety from their body language and gestures, made observation an important part of the interviewing process (Savin-Baden & Howell Major, 2013). My action of taking notes instead was necessary as I was still in the process of building a trusting relationship with them. I subsequently transcribed the notes and they now became records of data rather than that of a social encounter (Cohen, Manion & Morrison, 2018). I later gave each practitioner a transcript of their interview to enable them to clarify any issues that may have been captured incorrectly during notetaking.

Gaining practitioners' perspectives of ESD was important in a study like mine where I invited practitioners as co-researchers as we needed to have shared understanding of the purpose of the research. Their understanding provided a basis for the joint action research work that followed as I respected and harnessed their funds of knowledge and built upon them together with the children. Their funds of knowledge were vital for the research process in the ways they engaged with the research by planning and implementing activities through knowledge of practice and the curriculum, and data collection. These factors, coupled with their funds of knowledge about the children and their families, have been useful for taking the project forward.

6.3.4 Observations – 'seeing, listening and talking'

Observation as a research process provides opportunities for the researcher to gather 'live' data from social situations as they occur naturally (Cohen, Manion & Morrison, 2018). Just as I carried out observations of all participants (practitioners and children), observations of the children were also carried out by the team. This was to strengthen the collaborative approach to data collection in the study. Child observation is carried out on a daily basis to support children's learning in the EYFS and forms the basis of work carried out by professionals and students, amongst others (Papatheodorou, Luff & Gill, 2012). It is used in this study as a basis for exploring how children engaged with the activities planned by practitioners and those which came about spontaneously from children's engagement with others. It also enabled us to directly observe situations rather than rely on secondary information to produce valid and authentic data which would not have been possible from inferential methods (ibid). We focused on children's understanding of the topic under discussion through their language and communication skills as they communicated with me and the team while participating in the activities with adults and other children. I was a participant observer (Papatheodorou et al., 2012; Creswell, 2014; Mukherji & Albon, 2018) working closely with practitioners in carrying out activities with the children.

Participant observation is a subtly intrusive form of observation as it enabled me to gain access to research participants by being an empathic and sympathetic member of a group (Cohen, Manion & Morrison, 2018). I spent many months becoming familiar to the children by joining in activities with them. This enabled me to appreciate the children's responses and their viewpoints while having conversations with them during activities. The observations were used to address and reflect on the research question to show how teaching and learning activities were shaped to promote better knowledge and practice of ESD, especially in the ways that activities were either planned or those that emanated from children's interests and how children interacted with these activities.

6.4 Data analysis

Data analysis is the process of systematically searching and arranging data collected during the research with the ultimate aim of making sense from them (Bogdan and Biglen, 2007; Merriam, 2009; Cohen, Manion & Morrison, 2018). It is also the

ongoing process of breaking data collected into meaningful parts for the purpose of examining them, in order to answer the research questions (Savin-Baden & Howell Major, 2013). Hence, data analysis for the study began from the onset and continued through to the submission of final thesis as it moved from small units of information to uncovering the larger picture emerging from them (ibid.).

Findings in this study moved from specific to the general, such as from data to description of processes. I also need to acknowledge that even though data were collected independently of top-down framing, I imposed some structures to my analysis such as framing it within the four dimensions of sustainable development, the SDGs as well as to findings based on my review of literature. I did not search for data either to prove or disprove any hypothesis personally held prior to the research process and this enabled me to focus on data to substantiate findings with regard to the research question (Bogdan & Biklen, 2007; Savin-Baden & Howell Major, 2013**).**

With the practitioners' agreement, and due to their practice schedule, that made it impossible for them to take part in the full analysis of data collected, I carried out analysis of the data independently at first, and then shared this with them for their comments at every stage of the analysis process. I organised and searched for similarities or relationships in the data in each phase of the action research by annotating text and developing codes that led to themes or patterns based on relationships among them, as this is one of the ways qualitative data can be analysed (Creswell, 2014). This method is known as thematic analysis (Braun & Clarke, 2006; Creswell, 2014) that enabled me to draw together all relevant data for the exact issues of concern to me as well as preserving coherence of materials gathered (Cohen et al., 2018).

I studied all the data collected, a range of verbatim transcriptions of audio recordings of conversations with practitioners and children, practitioners' interview data, my field notes in diary entries, my observations on participants, as well as notes from shared observations from the team on children in the setting, during each phase of the action research. Preliminary analysis entailed searching across data to find repeated patterns of meaning so that I could link the accounts of what was done with reasons for them.

At the end of the three phases of the action research, I carefully studied all themes from all the phases again to search for similarities and links, re-arranging them as some

of the themes either re-occurred throughout all phases, or exhibited similarities or other links, as well as forming my own view. To interpret data, I sought explanations for them in the literature, critiquing, or generating theories relating to them, thereby making thematic analysis of data an effective method for data analysis in this study.

This approach enabled me to re-focus on the main concerns of the research and collate all relevant data from interviews, observations, field notes in diaries and conversations to provide individual or collective answers to the research questions (Cohen et al., 2018). Data were carefully analysed to describe participants' experiences in narratives that are intended to capture the experiences which otherwise would have remained hidden in the numerical anonymity of quantitative data (Sallee & Flood, 2012).

Data analysis for this study was broken into three parts. The first part focused on analysis of the face-to-face interviews with practitioners in the nursery setting; whilst the second and third parts of data analysis focused on actions, activities and relationships of all participants in the setting. The second part focused specifically on how participants gained knowledge and understandings of their environment, whilst the third part of data analysis focused on how participants gained care and connectivity to each other and their environment.

To gain answers to the research question: How can teaching and learning activities be shaped to promote better knowledge and practice of ESD within an early years setting? I analysed data through the lens of UNESCO's four inter-related dimensions of sustainable development – natural (environmental), social, economic and political; as well as making links with the relevant principles of sustainable development which these four inter-related dimensions support, where appropriate. I hold the four dimensions to be useful in analysis because they provide a holistic and integrated interpretation of the aspects of sustainable development, and echo the view of sustainable development as that which seeks to establish social, economic and political justice for all people in striving for an environmentally sustainable world and respect and care for the non-human world (UNESCO, 2002; Siraj-Blatchford et al., 2010; Ärlemalm-Hagsér, 2013b).

The four dimensions of sustainable development were used in my analysis because they provided a framework for achieving the sustainable development goals. Quality early childhood development is crucial in achieving some of the SDGs including

poverty, hunger, health and wellbeing, quality education, reduction of gender inequality, water and sanitation (see Chapter Two). I paid attention to how findings from the research aligned with the SDGs and how they explicitly linked with relevant sections of the EYFS in England.

6.5 Validity and reliability of this study

Validity and reliability are important requirements of research, as without them, the whole research process becomes worthless (Cohen et al., 2018). Validity is the ability of a researcher to offer as sound a representation of the field of study as the research methods allow (Edwards, 2010), whilst reliability refers to the degree to which the researcher's theoretical analysis and conclusions fit or correspond to the actual data collected (Mukherji & Albon, 2018). It also includes fidelity to real life, context and situation specificity, authenticity, comprehensiveness, detail, honesty, depth of response and meaningfulness to the participants (Cohen et al., 2018)

Validity of a qualitative research such as the study reported in this thesis refers to its authenticity, the honesty and trustworthiness with which participants have been approached, as well as the credibility with which actions and events have been reported and analysed (Hughes, 2010; Mukherji & Albon, 2018). This is opposed to quantitative research where validity relates to the careful sampling, appropriate data collection instruments and suitable statistical data analysis (Cohen et al., 2018). Whilst validity of a data collection instrument in quantitative research is closely linked to its ability to produce intelligible and replicable results, validity in qualitative research is sought through member checking, rich descriptions, peer reviews and external audits (Creswell & Miller, 2000).

The validity of this study was established using various methods for data collection, as well as a combination of theoretical perspectives to interpret participants' actions and their understandings of the world they live in. I also incorporated participants' views into the study through collaborative working with practitioners who were invited to participate as co-researchers, and children in the study whose voices I tried to present accurately in the research process (Creswell & Miller, 2000; Edwards, 2010). Validity of the study was also maintained through member checking, as practitioners engaged in a periodic review of findings and the research process that I presented to

them during my visits as well as in discussions during staff meetings. I also released data and interpretations to them to confirm the credibility of information and narrative accounts (Creswell & Miller, 2000; Taylor, 2010). Discussions of data and emerging themes that were presented to practitioners usually became the foci of conversations between us in the setting as practitioners were able to follow the direction the project was taking, make suggestions regarding further activities to be carried out with the children as well as shared their observations and reflections, to enhance the inclusive nature of the research (Taylor, 2010). Starting from my collaborative checking of findings with practitioners; their acceptance of authenticity of reports of events; to checking of parental consent forms against children's photos and images to be used in the final thesis, I was able to invite and engage practitioners in the research process. Their engagement with the research process is evidenced in the ways they produced, bound and displayed copies of the research report at each stage of the action research. They also produced photos of children's activities as they engaged with the research in a digital album in the setting's reception area for practitioners, parents as well as the children to gain better understandings about the research. Information about the project as displayed on a specially created notice board (see Photograph 6.5 on the next page).

My prolonged engagement with participants for a period of two years also enhanced the validity and reliability of the study as I built trust and rapport with both practitioners and children, which strengthened their voluntary engagement with the research process (Creswell & Miller, 2000; Veale, 2005). The prolonged period also enabled me to gain better understanding of the research context and to achieve its aims as there was greater time to use all the data collection methods employed effectively.

My description of the setting, participants and the findings in themes in detail (Creswell & Miller, 2000), had the purpose of achieving validity and reliability due to its authenticity. This was through thick descriptions of events and participants' actions and comments in their own words. This had the effect of providing as much detail as possible when locating them in specific situations; bringing a relationship or interaction alive between two or more persons; or providing a detailed account of people's feelings and emotions, especially with regards to children's conversations. This credibility is established through the lens of readers who, through the vivid detail, will be transported into a setting or situation (Creswell & Miller, 2000; Cohen et al., 2018).

Photograph 6.5: Displayed information about project

Finally, the research diary I kept documented the rigour of my research process and provided a clear audit trail through the entire project. Where appropriate, these diary entries were considered as sources of data for the research. Transcribed samples of these entries can be found in Appendix 9.

6.6 Summary

In this chapter, I have presented the nursery setting that served as the research context. It is naturalistic because all participants attend the setting regularly regardless of my project. The discussion of the setting sets out the context for the research as it provides information about its location, the service providers, number of children who attend,

their funding/attendance patterns and the setting's mission which aligns with the ethics of care theoretical perspective adopted for this study.

I have also shown how the naturalistic setting enabled me to pay detailed attention to participants and events as they occurred. It also enabled the team's use of social and interpretive skills and vernacular methods of enquiry (Walker, 2017) that were enhanced through social interactions among participants and characteristic of a qualitative study. Doing this enabled us to focus on conversations, actions, describe events and their specific locations, all of which I reported in narrative formats.

The position I have taken as a researcher in this project lends credence to my commitment to the project. I provided an authentic and trustworthy account of the action research that shows the honesty with which I approached the participants. The account also shows how actions and events were reported using various methods of data collection, and how they have been analysed via a combination of theoretical perspectives to interpret participants' actions and their understandings of the world they live in specifically about implementing ESD in ECEC.

My personal qualities of building trusting relationships and rapport with participants (Oppenheim, 1992, Savin-Baden & Howell Major, 2013; Crano, Brewer & Lac, 2015) enabled me to keep participants motivated and interested, not only when conducting interviews, but throughout the entire project. Subsequent chapters will provide detailed evidence of how this took place specifically within my study. Whilst Chapter Seven gives a description of and analysis of my interviews with practitioners at the outset of the research, Chapters Eight and Nine provide descriptions and analysis of my work with all participants.

Chapter Seven: Presentation and analysis of findings – Practitioners' interviews

This is the first of three chapters that present and analyse the findings from this research study. As part of my need to answer my research question: How can teaching and learning activities be shaped to promote better knowledge and practice of ESD within an early years setting?, I felt it necessary to establish a baseline by finding out how the practitioners understand the concept of ESD, what shapes this understanding and how their knowledge is reflected through the ways they describe it.

I established this baseline by engaging them in a series of semi-structured interviews to explore their formative influences of ESD, their descriptions of the concept and the kinds of educational activities they already provided for the children in their care based on these understandings. In short, I sought to establish their existing funds of knowledge based on my awareness that their diverse household knowledge, cultural funds and skills, gained from participation in their respective social lives, could be useful in informing practice in the setting. I therefore needed to examine and build upon these rich experiences and knowledge that the practitioners have gained from participation in their respective social lives by exploring their formative influences and understandings on the concept of education for sustainable development (ESD).

Gaining practitioners' perspectives of ESD was necessary for this project where I had invited them as co-researchers. Their understanding provided a basis for the joint action research work that followed as I respected and harnessed their funds of knowledge and built upon them together with the children. Their funds of knowledge about the children and their families, practice and the curriculum have enabled them to engage with the project by planning and implementing activities and data collection.

I argued in the review of literature (see Chapter Three) that there is a close link between educators' content knowledge of a topic or concept and their planning effectively for children's learning of that topic. Educators are also shown to have profound influence on children's education, especially in the early years and this can be evidenced through the curriculum events, activities and opportunities that they design for children to achieve certain learning outcomes (Sund & Wickman, 2008). As such, it is a common-sense notion that a teacher will teach what he/she particularly cares about (Sund & Wickman, 2008) and this holds true for practitioners' planning effectively for sustainability in an early years setting such as the one reported in this thesis.

It was equally important to explore their understandings as there is no explicit mention of sustainability in the Statutory Framework for the Early Years Foundation Stage (EYFS) curriculum (DfE, 2017) in England, hence the likelihood that practitioners are not well informed about ESD within their initial training. Yet, ESD is vital for young children's individual and social development at this stage of their learning due to its ability to influence their present and future beliefs, values and actions (Davis, 2015; Engdahl, 2015). In the absence of practitioners' specific training for ESD, I am aware that a combination of knowledge, skills and values develop from their formal and informal interactions with their social environment which ultimately leads to the formation of insights, attitudes and behaviours towards sustainability. This therefore translates into their pedagogical knowledge for teaching what they care about, directing their approach to learning as they invite pupils to take part in the mutual creation of knowledge. I reviewed these responses with reference to the theoretical framework adopted for the study, as well as through the lens of UNESCO (2010b) four dimensions of sustainable development and relevant SDGs.

7.1 Practitioners' understandings of ESD and how they are developed

At the beginning of the study, I interviewed 10 practitioners to explore their understandings of ESD. In doing this, I requested them to think of five words which sum up their understanding of ESD (Hill et al., 2014). Exploring practitioners' understandings of ESD in addition to how they are developed was important for this study as the review of literature highlighted that practitioners' pedagogical content knowledge of a concept is their conception or understanding of what it means to support children's learning about that concept (Sund & Wickman, 2008). This means that practitioners' understandings will influence their ability to carry out activities in ways that are engaging for the children using appropriate strategies (Asplund Carlsson & Pramling Samuelsson, 2008).

To analyse practitioners' understandings of ESD using five words (Hill et al., 2014), I produced a visual representation of their responses in the form of a Wordle, a web tool, whereby text clouds are created using the size of the text to represent word frequency in the source data (wordle.net, 2019). The more frequently the word occurred in practitioners' responses, the bigger the word in the Wordle. I also saw the need to make

some minor edits to words used by the practitioners as it was evident that similar ideas had been expressed in different forms. Hence, I took note of the core words and edited them to produce words that captured practitioners' general understandings. For instance, in the area where words like 'nurturing/caring/looking after' were mentioned, I edited them to read as 'care'; 'team working/working together' were edited to read as 'team'; 'recycling/recycle' edited to 'recycling'; 'growing/growth' edited to 'growing'; whilst I ensured hyphenation in phrases like 'child-led'; 'open-minded' and 'positive-practice'. All other words which appeared once have been left to remain in their current states. A table of the words, as provided by practitioners, and as edited, can be found in Appendix 10.

To produce a visualisation of practitioners' words, I typed in the edited words directly onto the Wordle tool using lower cases letters to ensure consistency in terms of font size. I used the Berylium font character and chose the word layout of 'rounder edges' and 'half and half' i.e. half of the words typed into the Wordle tool will appear horizontally and vertically in equal weighting. Finally, in terms of colour, I used 'organic carrot' for a visually pleasant finish and the Wordle is presented below:

Diagram 7.1: Practitioners' initial understanding of ESD

The more frequently words occur in the data, the bigger the word in the Wordle. For instance, 'care' appeared as the biggest in size due to the frequency it appeared in the data. Conversely, as the word frequency decreases, so does the size of the words proportionally as can be seen in the case of 'environment' and 'recycling' which are next in order of size to 'care' as they are of the same size due to their appearing the same number of times in the data. 'Growing' and 'life' are next in order of size as they appeared the same number of times in the data. Other words like 'education', 'respect', 'animals', 'others', 'future', 'team' and 'food' are next in order of size as they appeared the same number of times in the data. All other words which appeared once e.g. 'guidance', 'hygiene' and 'confidence' appear in the same size in the Wordle.

Using a Wordle to represent practitioners' responses enabled visualisation of trends in their perceptions of ESD, showing them to hold predominantly basic concepts which reflect traditional understandings of environmental sustainability rather than awareness of global Sustainable Development Goals (SDGs) or wider political and social concerns. There is no direct mention of these or other frameworks, but strands of the dimensions can be inferred from the word matrix.

Most of practitioners' responses rested on the environmental (natural) dimension of sustainable development, seen as words linked to the environment e.g. 'environment', 'recycling', 'growing', 'seasons' and 'planting'. On the other hand, the smaller sized words such as 'respect', 'fairness' and 'equality' highlight practitioners' responses as resting on the political dimension of sustainability. In addition, while words like 'confident', 'guidance', 'hygiene', and 'love' rest on the social dimension of sustainability; whilst the Wordle shows mention of words like: 're-use' and 'future' to rest on the economic dimension of sustainability.

7.2 Practitioners' descriptions of educational activities provided for children based on their understanding of ESD

In addition to using five words to describe their understandings of ESD, I asked the practitioners to provide examples of their practice initiatives based on their understanding during the one-to-one interviews. Their responses were analysed through the lens of UNESCO (2010) four dimensions of sustainable development – natural (environmental), social, economic and political as discussed in Chapter Two.

The four dimensions provided an integrated approach to data analysis and enabled further explorations of practitioners' approaches to sustainable learning with the young children in their care. Further references were made to practitioners' formative influences of ESD as these provided insights into their pedagogical practices. It is important to note that the responses on practice initiatives are self-reported, made by individual practitioners, and hence are not representative of the nursery setting. My analysis of their responses is not to infer overall practice initiatives in early childhood contexts in England. All I seek to do is to present how practitioners understood and implemented sustainability learning with the young children in their care at the outset of this study.

7.2.1 Natural (environmental) dimension of sustainable development

Evidence from practitioners' responses showed their understandings of ESD as being strongly related to the natural or environmental dimension when three of them commented that children are supported to do planting in the garden: *"In spring, we do planting with the children. We have a vegetable patch"; "We plant stuff, watching things grow"* and *"Allowing children to do planting in the garden"*. These comments link to the broader dimension of natural or environmental dimension of sustainable development as they suggest that the practice of planting also supports the children's awareness of where food comes from. This was gathered from comments made by one of the practitioners when she mentioned that her practice initiatives include supporting children's awareness of where food comes from, especially during snack time: "k*nowing where things come from or how they are grown. Do they grow above or below the soil?"* Her initiatives also include having conversations with children during vegetable printing when opportunities arise for her to ask children questions like: "*Do you know what it is or where it is grown …?"*

In addition, comments made by one practitioner who understands ESD as: "*tidying up, putting things away …"* were reflected in the ways that children were encouraged to tidy up toys and other equipment in the nursery environment. Three practitioners also mentioned that their understandings of ESD related to *"Helping children to recycle using different bins"* and "E*ncouraging children to recycle."*

The natural (environmental) dimension of sustainable development was observed through ways in which the outdoor garden played a prominent role in the setting's everyday agenda. For instance, children were encouraged to make use of the outdoor environment on a daily basis, especially in fulfilling the requirements under Section 3.58 (p.30) of the Early Years Foundation Stage (DfE, 2017) which states that:

"*Providers must provide access to an outdoor play area or, if that is not possible, ensure that outdoor activities are planned and taken on a daily basis (unless circumstances make this inappropriate, for example unsafe weather conditions)"*.

Gardening activities demonstrate practitioners' practice initiatives on the natural or environmental dimension of sustainable development as the children were encouraged to participate in the initial wildlife gardening project through sowing of seeds and regular tending to the garden. Individual children were subsequently supported in growing sunflower seeds to foster their understandings of how things grow.

Whilst it is important to recognise the potential of gardening activities for learning about how food is grown, other functions of gardening activities, such as those that explore social and political dimensions of sustainable development as children carrying out outdoor activities, need to be examined. For instance, there was no specific mention of children being encouraged to have connections with nature as they engaged in planting. This raises issues of practitioners' limited understandings of the natural dimension of sustainable development as the gardening activities could provide opportunities for them to playfully engage children with a sense of appreciation and value of the natural and social world as they planted and watered seeds. Other social aspects of being outdoors such as enhanced child-adult explorations and interactions, knowledge construction as well as transformative effects from gardening activities on the children through social participation (see Chan, Choy & Lee, 2009; Wilson, 2012; Haas & Ashman, 2014; Norðdahla & Jóhannesson, 2014) were not explicitly mentioned.

It is also important for children to be encouraged to examine some dominant economic systems which are associated with growing, such as distribution and consumption. Whilst children were encouraged to explore different kinds of food that grow either above or below the soil, they could also be supported to explore how these foods get to their dinner tables. Also, in practitioners' comments about supporting children in

tidying up and putting things away, these actions could have been linked to the broader conceptualisation of sustainable development of creating a cleaner and better world. However, references to these broader conceptualisations of sustainability were absent from the practitioners' comments.

Despite practitioners' apparent limitations to make links with the broader conceptualisations of sustainability in their responses, it was interesting to note that some of them mentioned formative influences of being outdoors that were linked with their childhood enjoyment of nature. For instance, their comments such as: "*We went out to parks and was taught not to pick flowers, growing things and not littering",* and *"Planting things e.g. rhubarb - we used to make pies from it, cucumber, etc. And recycling too,"* highlight the natural (environmental) dimension of sustainable development on one hand, whilst revealing their participation in family activities, on the other hand. This was gathered from their responses to questions on how their perceptions of sustainability are developed, such as: *"From parents while growing up"*; *"From parents – from basic family life"*; *"From parents and grandparents'* and *"From others ... people around me and family"*. Based on this highlighted development, the family is important in having the greatest influence on practitioners' development of positive attitudes and values relating to the outdoors and ESD (Fägerstam, 2012). I linked this development to the broader conceptualisation of sustainable development on the social dimension through intergenerational involvements as practitioners' responses indicate that 'family' relates not only to mother or father, but to the wider family such as grandparents and other significant adults as well (Starbuck & Olthof, 2008).

Practitioners have used their existing knowledge and skills to promote sustainable development for the children through participation in gardening activities designed to foster children's sense of appreciation and value of the natural world (see Chan, Choy & Lee, 2009; Wilson, 2012; Haas & Ashman, 2014; Norðdahla & Jóhannesson, 2014). Although not explicitly stated by the practitioners, their practice promotes education for sustainable development in the early years setting. Their initiatives of encouraging children's acquisition of knowledge, values, skills and practice relevant for global citizenship such as taking part in decision-making, especially with regards to watering and tending the garden link with the United Nations Sustainable Development Goal 16 which has the aim of ensuring responsive, inclusive, participatory and

representative decision-making, especially among children as young as those in the study. Growing and tending the garden also link with Sustainable Development Goal 15 for 'Life on Land' that aims to protect, restore and promote sustainable use of terrestrial ecosystems. Practitioners' suggestion to grow a wildflower garden on a disused patch in the outdoors at the outset of the project, has, on a small scale, the function of restoring and conserving a biodiverse ecosystem of insect and plant life, when it was expanded to incorporate the ESD project. Practitioners' initiatives of supporting children in tidying up, putting things away and encouraging them to recycle also link to the broader conceptualisation of sustainable development of creating a cleaner and better world, especially with Sustainable Development Goal 12 which aims to substantially reduce waste generation in the setting through recycling (UN, 2015; see also Chapter Two).

7.2.2 Social dimension of sustainable development

Practitioners' responses revealed strong connections to the social dimension of sustainable development, when two of them commented that sustainable development in practice is about *"looking after each other and the environment and the animals", "how to care for themselves and the world"*; *"teaching children to care for things"* as well as *"looking after animals – nursery pet rabbit"* that relate to caring as articulated in the ethics of care (Noddings, 1984, 2013). The practice of supporting children to care for animals was observed in the ways in which the practitioners supported the children in caring for Reggie, the nursery pet rabbit. They encouraged the children to feed it with left-over salads and take it for occasional walks on a leash in the garden.

One practitioner commented that her practice initiatives include: *"asking if they are ok, need help, being polite and making sure they are treated equally"*. One practitioner commented that ESD means: "*projecting my values to the children e.g. being kind to each other, loving each other, like being proud of differences, being non-judgemental with children,"* whilst another commented that her practice initiatives include: "*talking to other people and trying to help others from what they say and their feelings"*. The practitioners' responses showed their limitations in making connections to some broader conceptualisations of sustainable development such as the explicit commitments to equality and diversity among children in the setting to ensure a life of

dignity for all that aligns with SDG 10 (UN, 2015). There were also no references to the transformative effects of children's interactions as they interacted with each other and the adults, but my observations within the setting showed that practitioners were in practice supporting children's development of skills and values that rest on the broader social dimension of sustainable development. They modelled caring by treating children with respect and consideration whilst, at the same time, encouraging them to support each other within the setting, caring for themselves, others and the environment. Another example of the broader social dimension of sustainable development is evidenced in the way older children or those who have been in the setting for longer, are encouraged to support newcomers to the nursery using the 'buddy' system to support the settling-in process, which in the long term has the transformative effects of building relationships. Talking to people and trying to help others indicates that listening is essential to the caring relationships fostered by these initiatives as participants in the setting listen to one another and are encouraged to use kind words and not hurt others; using words such as *"please"*, "*thank you"* and being sensitive to others' needs, to ensure that everyone is treated equally (Noddings, 1988, Rinaldi, 2006).

Although not explicitly mentioned in their responses to my questions during the interviews, practitioners' mentioned practice initiatives promote education for sustainable development as they link with the broader conceptualisation of sustainable development which focus on health and well-being in SDG 3 which targets good health and well-being. Practitioners ensure that the children feel well by fostering love among them, as well as supporting them to care for themselves, others, and their world, including animals. These practice initiatives link to promotion of education for sustainable development as they encourage children's acquisition of knowledge and skills relevant for global citizenship. Kindness and the ability to form caring relationships are important qualities of peaceful and empathic citizens who can reflect on the effects of their actions on others. These initiatives, therefore, are implicitly aligned with sDG 16, as they have the function of promoting an embryonic peaceful and inclusive society for sustainable development within the early years setting (Noddings, 1988; Rinaldi, 2006; UN, 2015).

Other practice initiatives such as those which ensure that children are being treated equally implicitly link with the political dimension of sustainable development which

lays the foundation for a democratic approach (Pramling Samuelsson, 2011) as provided in Sustainable Development Goal 10 which aims to empower and promote social inclusion of all, irrespective of age, ethnicity, religion, economic or social status as well as ensuring equal opportunity for all children in the setting. All the enumerated initiatives were evident as practitioners playfully engaged the children with a sense of appreciation of the social world as they nurture a sense of positive relationships and civic capacity within them (Elliot and Davis, 2004; Warwick, Warwick & Nash, 2018).

On examining practitioners' formative influences of sustainable development with links to the social dimension, it was evident from their responses that their initiatives of caring for others developed from positive interactions with family that enabled them to develop caring skills through most of them commenting that they learned sustainable values from *"family",* especially through *"caring for other people".* This makes the family the most influential of practitioners' formative influences of sustainable development. On this note, I acknowledge that it is not possible for all families to be caring or that they can all model caring and sustainable influences to their children. I aimed to explore only the positive formative influences of sustainable development of the practitioners in this project.

7.2.3 Economic dimension of sustainable development

Responses from practitioners such as: *'Getting children to understand the Earth and the environment. Making sure that things are there in the future, not just in the present'* and their practice of *'looking after things with respect - developing on it to last longer'*; and *'developing on things to last longer',* revealed strong links to the economic dimension of sustainable development, especially as they were focused on making things last for longer. This practice was re-echoed by another practitioner who also commented that: *'We recycle things e.g. we ask the children to bring in yoghurt pots and other stuffs for junk modelling'* while another one said that ESD for her practice means that she encourages *'not throwing things away ... using left over food for messy play;* '*reusing boxes or yoghurt pots for creative work e.g. junk modelling and cereal boxes for role play.'* This was shown in the ways that children were encouraged to recycle or re-use left-over food packages for creative work.

However, participants did not explicitly report on either the broader economic dimension of saving money through re-using items as resources for creative work in the setting (a necessary, but taken-for-granted action in a poorly funded sector), or on the broader social dimension of sustainability which promotes parental involvement in their practice of asking children to bring in *'yogurt pots and other stuffs for junk modelling'*. Nevertheless, the broader conceptualisation of sustainable development on the economic dimension was made when one of the practitioners mentioned that children were supported in self-care skills when she commented that ESD is about '*enabling children to gain lifelong skills, how to care for themselves and the world'*. Hence, practitioners supported the nursery children in self-care e.g. putting their coats on/off especially through role-play activities to encourage independence; wiping their noses; washing their hands before meals and after toilet, toilet training particularly through story books about 'potty training', making healthy food choices; in addition to activities that support children in acquiring road safety skills. These enumerated practice initiatives have the capacity to support children's acquisition of lifelong skills, such as personal health and safety, which are vital skills for sustainability.

The practice initiatives link to promotion of education for sustainability for children in the setting. Practitioners' initiatives of reusing product packaging for junk modelling activities; recycling; and reusing left-over food for messy play implicitly link with SDG 12 as they function to ensure sustainable consumption and production patterns, by minimising waste and pollutants generated in the setting. In addition, reusing materials has the benefit of reducing costs. In addition, supporting children's development of lifelong skills of personal road safety links to SDG 3 for health and well-being that relates to reduction of death and injuries from road traffic accidents (UN, 2015).

7.2.4 Political dimension of sustainable development

Practitioners' responses on their practice initiatives also revealed the political dimension of sustainable development. One of the practitioners commented that her understanding of ESD is about: *'Having golden rules and routines for the children; good team working and everyone working together – staff and children. Good management of staff';* while another stated that *'the children lead the way'.* Although

not expressly stated by the practitioners, these enumerated initiatives reveal the broader political dimension of sustainable development as they link with SDG 16 as they support children's development of democratic values which are important for sustainable development in the early years. For instance, as mentioned by one of the practitioners, the setting has Golden Rules and routines for the children that translate to ensuring and strengthening the rule of law and promoting children's rights in the setting. The Golden Rules board is shown below:

Photograph 7.2.4: The Golden Rules board.

The Golden Rules displayed on the board apply to everyone in the setting. As children are encouraged to follow the setting's Golden Rules, they are enabled to develop democratic values like communication skills through looking at and listening when another person is speaking. This ensures that every child is listened to whenever they need to speak. This also encourages fairness and equality in the ways children are treated in the setting as well as the fostering of their decision-making skills when they are being allowed to lead the way, especially when they are specifically chosen to lead

group plays to give them sense of importance and confidence. They are also encouraged not to hit one another using 'kind hands' in their play with other children.

Practitioners' practice initiatives that fall under the political dimension of sustainable development can also be linked to their formative influences. One of the practitioners mentioned that her formative influences were from interactions within her family as she learnt some values from basic family life such as: *"not judging, being very open-minded, and accepting of different cultures, beliefs and religions".* When viewed in the light of the broader political dimension of sustainable development, this comment can be seen in the practice of treating every child equally which was also mentioned in the discussion on the social dimension. When practitioners accept children for who they are, irrespective of their cultures, beliefs and religions, this has the tendency to promote a democratic atmosphere where every child feels valued as well as given the respect they deserve, especially in the local context where issues of homophobia and racism are becoming widespread. In addition, education for sustainable development is promoted through the continued creation of a peaceful and inclusive culture within the setting, as exemplified by all the enumerated practice initiatives. These also rest under the social dimension of sustainable development, aligning with Sustainable Development Goal 16 that enjoins institutions, such as a nursery setting, to promote and enforce non-discriminatory laws and policies for sustainable development. Treating children with fairness and recognising their achievements especially through praise, has the long-term effects of building citizenship values that enable them to appreciate the achievements of others and foster harmonious existence among them.

7.3 Review of practitioners' responses with reference to the theoretical framework

My explorations of practitioners' formative influences of sustainability have shown how their learning has taken place within a socio-cultural context – the family, where they have interacted with others to develop knowledge and opportunities for access to peers and other significant adults in their knowledge construction (Vygotsky, 1978). Their interactions with immediate and extended family members made their learning to be rooted in the context of their culture as they had access to more mature individuals (such as parents and grandparents) who already practise specific areas of

knowledge embodied in their actions in their societies (Wood, 1998). This highlights Vygotsky's view of the role that peers or significant adults play in children's learning in the knowledge construction process. My awareness that social interaction is central to individuals' developmental process, enabled me to utilise this aspect in subsequent parts of the study to build on and move the action research project forward.

In addition, my exploration of practitioners' existing knowledge of sustainability is an acknowledgement that they are competent and knowledgeable due to their life experiences (Moll et al., 1990; Gonzalez, Moll & Amanti, 2005). It is also based on my awareness of the social relationships that these practitioners participate in and how what they have learnt in their respective home environments could be key to understanding their cultural identity which could be used to guide planning and implementation of activities for children in the nursery setting. This perspective, known as the 'funds of knowledge', enabled me to recognise and acknowledge practitioners' experience, professional knowledge and local insights, and how I sought to invest in and built upon to grow in all participants, including myself (Moll et al., 1992).

Practitioners' interactions with parents, grandparents as well as *"from others ... people around me and family"* as commented by one of the practitioners, highlight the reciprocal nature of these practices that have the capability of establishing obligations that are based on mutual trust, thereby leading to the development of long-term relationships. The practices described by the practitioners have provided learning contexts that provided opportunities to engage in activities with people they feel comfortable with because of trust. This highlights the relational aspect of care that Noddings (1984, 2013) supports as one that is tightly tied to experience and focus on human beings and their relations to each other in given situations. The practitioners are connected to their family members through their encounters with them and have gained skills and understandings about sustainability through modelling, dialogue, practice and confirmation, that are not only unique to ethics of care, but central to their moral development (Noddings, 1988; Johansson, 2009). This aspect of care became a focal point in this study as findings show participants' relationships with others were effective due to caring and trusting relations formed among them. This also enabled better teaching and learning for sustainability in the study.

7.4 Summary

In this chapter, I have shown practitioners' understanding of ESD at the beginning of the two-year project that was analysed through the lens of the theoretical framework, UNESCO (2010) four dimensions of sustainable development and the SDGs. This analysis shows how their perceptions of ESD were formed through interactions with their families, thereby highlighting the importance of the family as having the greatest influence on practitioners' development of knowledge, values, attitudes, skills and practices (Pramling Samuelsson & Kaga, 2008; DfE, 2017), especially with regards to sustainability. Hence, the family's role in educating practitioners for sustainability is an important one that was recognised for children and adults when teaching and learning for ESD in the early years setting.

The view that young children bring in a wealth of experience from their respective homes through their socialisation processes, can also be extended to the practitioners as it is evident from the interviews that they, too, had gained a wealth of knowledge and skills through their participation in family activities. The social relationships that the practitioners had partaken in, especially gardening, have supported them in developing some lifelong attitudes, values, behaviours, habits and skills which are essential for sustainability such as planting/growing, recycling, re-using, fairness, respect for others, to mention a few (Vélez-Ibáñez & Greenberg, 1992; Moll, Amanti, Neff & Gonzalez, 1992; Mbebeb, 2009; and Hedges, Cullen & Jordan, 2011). In this way, I used funds of knowledge to explore and acknowledge practitioners' interests of sustainability issues with focus on how they engage with these interests especially in the planning and provision of activities for children's learning for sustainability in the setting (Prince, 2010).

My view that young children's learning experiences are shaped by the knowledge, skills and values of their educators became the driving force as to how the team drew upon our existing knowledge, values, attitudes and skills of sustainable development as a basis for pedagogy and practice of sustainability in the setting. Planning for the creation of a wildlife garden with the aim of attracting bees was also based on practitioners' observation of children's interests in planting and bees. Focusing on these interests provided opportunities for children and their teachers to explore ideas in both planned and unplanned interactions, thus strengthening children's motivation, memory, effort and attention (Hedges, Cullen & Jordan, 2011). Hence, in this study,

many of the actions with the children and practitioners were planned, whilst others were spontaneous, arising from the team's and children's interests, observations as well as new insights from data collected by the team. The next chapter will focus on how participants in the study gained knowledge and understanding of sustainability from their environment.

Chapter Eight – Presentation and analysis of findings: Participants gaining knowledge and understanding of sustainability from their environment

In this chapter, I present and analyse findings from data collected during the three phases of the action research with practitioners and children in the nursery setting. It addresses the research question:

- How can teaching and learning activities be shaped to promote better knowledge and practice of ESD within an early years setting?

I therefore focused on how participants gained knowledge and understanding of sustainability from their environment. My analysis centred on the kinds of educational activities provided for children in relation to practitioners' perceptions of ESD, as well as how children and practitioners initiate or engage with sustainability issues within the setting.

Data to address these issues were captured from participants' engagement with the wildlife gardening project that formed the starting point for participants' learning for sustainable development. Further data sources were obtained from other aspects of sustainability that were introduced to the children by the team or those that were initiated by the children themselves, and these were used as bases for children's learning for sustainability. Learning through the gardening project continued in the setting and was developed over the two years.

In capturing participants' voices and experiences, the team observed and listened to one another and to the children as they interacted with one another within the setting. I then analysed findings with reference to literature from reviewed studies, theoretical framework, through the lens of UNESCO (2010) four dimensions of sustainable development and relevant SDGs. Findings have been analysed as presented in turn under two main themes with accompanying sub-themes for a smooth narrative flow. The order of presentation of themes and analysis of findings is shown in the table on the next page.

Themes	Sub themes	Sub-sub theme
Children's awareness / learning about living things and why they matter	- Children's knowledge about some conditions necessary for plant growth. - Children's learning about how things grow - Ants/worms and their importance to the ecosystem - Bees and their importance to the ecosystem	Children's knowledge/learning about uses of honey.
Children's knowledge of the natural world through creative arts	- Three-dimensional modelling activities - Learning about bees through movement - Painting and collage activities	

Table 8.0: Order of presentation of themes and analysis of findings

I rounded up the presentation and analysis of findings with a table to summarise the key activities that were undertaken with the children. This was to show how they link to the EYFS.

8.1 Children's awareness / learning about living things and why they matter

As educators of young children who are learning about sustainability, we (the team) deemed it our duty to foster their interest in nature, the environment and natural science (Pramling Samuelsson, 2011, Wilson. 2012). Hence, it was necessary for us to provide opportunities for them to play outdoors to have first-hand experiences of the environment through explorations and we decided that the study should commence with a wildlife gardening project (Brook, 2010). This idea of a wildlife gardening project was proposed by the practitioners based specifically on children's interests in gardening, and this suggestion was agreed by the team as a basis for learning about sustainability issues. As the children and the team worked together in the garden, various events which provided platforms for learning for sustainability presented themselves, and these are discussed in the following sections of this chapter.

8.1.1 Children's knowledge about some conditions necessary for plant growth

Children and the team worked together to sow wildflower seeds in two designated growing areas in the garden, as well as in some old and used tyres that we filled with compost to use for planting seeds in the garden. Afterwards, we had regular episodes of watering the patches and tyres to nurture the seeds planted in them for growth. This created opportunities for the team and the children to visit the growing areas on a regular basis to check on the growth process. The children asked questions concerning the seeds they had planted, and we also questioned them in return and answered their questions as we worked together. It was noticeable that the children were eagerly awaiting the first plants and flowers to start showing. Sometimes, we would initiate conversations with the children to enable them to think about how to keep the plants and flowers alive when they finally start growing. Questions about what they could do to care for the flowers enabled them to come up with answers which provided evidence of their existing knowledge about some conditions which are necessary for plant growth (Moll et al., 1990). Some questions put forward to the children such as: *"What do we need to do to help the flowers grow?"* or *"What do the seeds we planted need to grow into plants and flowers?"* gained responses such as those listed below:

Child 1 (male): "*We water flowers to grow*".

Child 2 (female): "*Flowers need sun to grow*".

Child 3 (male): *Water makes the seeds grow.*

Child 4 (female)*: "If you don't water the plants, they will all die".*

It was evident that the children had knowledge that seeds and plants need water to grow. They were aware that if these plants do not receive water, they will die, thereby demonstrating their existing funds of knowledge of these issues (Moll et al., 1990).

In addition to these basic facts already mentioned, one of the children (female) provided further information regarding the qualities a gardener should have: "*You've got to be patient and water them. You've got to watch them grow*". I believe that the child's statement is a powerful one which lends credence to the fact that tending a garden is an opportunity for children to cultivate specific virtues such as patience, which children are expected to learn in sustainable development (Ralston, 2011;

Starbuck, Olthof & Midden, 2014). This is one step to their learning to wait for turns, listen to others as well as being listened to. These mentioned virtues have the tendency to support them in developing good interpersonal skills as they grow older, and this has the ultimate goal of enabling them to participate as democratic citizens in the society.

The children's awareness and knowledge of some of the conditions necessary for a plant to grow well was also demonstrated during an episode of checking on the newly growing plants. We noticed that the plants in the tyres which were in a little bit of shade close to the walls were leaning outwards away from the shade towards the brighter part of the garden as shown in the photos below:

Photograph 8.1.1a

Photograph 8.1.1b

Photographs 8.1.1a & 8.1.1b: Plants leaning towards the sun

Pointing to the plants leaning outwards towards the sunny area, I asked the child (female) who was with me: *"Why are they coming to this side?"* Without hesitation, the child responded: *"They need to be out in the sun",* demonstrating her awareness that plants need sunlight to grow well. On being asked for reasons other than sunlight why this was the case, one of the children answered that the plants were not growing well *"because they haven't got any water,"* (even though the plants were watered regularly).

The child could have responded in this way due to our regular activities of watering in the garden that show the need for plants to be watered regularly. Her response has demonstrated the limited knowledge about the importance of water to plants especially when the soil conditions are right. Their responses on the issue led to further discussions of why the plants could not grow well because the tyres were lined with plastic bags that were used to hold the compost in place and to enable the tyres to be placed on top of one another. Our discussions also focussed on the tyres' positions just outside the sheltered nursery doors that did not allow for the occasional rainfall to water them, unlike the growing areas outdoors. We also discussed that as the tyres were placed on the rubberised floor, the plants could not get deeply-rooted into the soil for *"food"* [nutrients]. The lack of nutrients and sunlight did not allow the plants in the tyres to grow well and they were turning brown. This led to further questions about what next to do to save the plants. Some children provided suggestions such as: *"put more water"* and *"put it in the sun"*. We thought deeply about the situation and I suggested to them that one good way of saving the plants was by transplanting them from the tyres to the bigger growing areas.

Me: *"Ummm …, I think we might need to transplant them so that they don't die off."*

"*Transplant?"*, echoed the children in amazement.

Another child (male) asked: *"What does transplant mean?"* to which I responded:

Me: *"Yes, transplant… This means that we could take them gently out of the tyres with lots of soil … and dig a hole in the bigger patches and plant them there. That way … they will start growing better."*

The children helped with transplanting the plants from the tyres to the bigger patches as shown in Photographs 8.1.1c and 8.1.1d on the next page. As we moved the plants gently from one area to another, we had conversations about how putting them in the new areas would help them, such as the need for plants to have their roots grow deep into the soil for nutrients, so that their leaves will not turn brown as shown in the stated photographs.

Photograph 8.1.1c

Photograph 8.1.1d

Photographs 8.1.1c & 8.1.1d: Researcher and children transplanting flowers.

During transplanting sessions, or whilst working in the garden tending the plants and flowers on other occasions, some of the children made explicit connections between what they were doing in the nursery and home. For instance, due to the nature of conversation generated from issues relating to water for plants, one of the children (female) made some connections between what was happening to the plants in the nursery and the plants at home in the conversation below:

Child: *"I planted seeds once in my garden …"*

Me*: "Okay … and what happened to it when you planted your seeds?"*

Child: *"Errr …. it didn't grow 'cos I needed to put more water in it so that it can grow"*

Me: *"So, what do you need to do then … to make it grow better?"*

Child: *"I put a little water … for so many days, it was growing, growing, growing into a big sunflower…"*

The child in question had thought about the situation of the plants which had turned brown in the setting. She then made connections between what transpired at home and what was happening to the plants in the nursery. Interactions such as those reported in this section have shown the importance of capitalising on children's existing knowledge, otherwise referred to as "funds of knowledge" (Moll et al., 1992; Vélez-Ibáñez & Greenberg, 1992) of planting and growing as useful resources for learning in this area. The children's totality of experiences in the home, which might have occurred either individually or with adult supervision, have contributed to the funds of knowledge that they brought to the setting. This knowledge was shared with the team during our interactions with the children. In addition, being outdoors with the children and other adults provided opportunities for conversations to develop, thus making a case for quality time spent with the children, coupled with the quality of relationships which had developed due to my prolonged time with them, for the effectiveness of learning for sustainability (Haas & Ashman, 2014). The kind of relationship that has been formed has implications for teaching for sustainability as it enabled me to develop deeper understandings about the children which in turn fostered the exchange of knowledge which has contributed to academic content in the setting (Moll et al., 1992).

8.1.2 Children's learning about how things grow

In addition to learning about the conditions necessary for plant growth, the children also learnt about how things grow. Starting from when the seeds were planted, they looked forward to seeing the first plants growing. The children were always excited to report on the growth processes as they checked the garden area every day. Their actions of checking the seeds for growth is consistent with the view that the garden demands that people wait because plants grow at their own pace (Ralston, 2011; Starbuck, Olthof & Midden, 2014). Hence, waiting for the first signs of shoots or flowers gave children opportunities to slow down to enable them explore changes in detail from day to day and from week to week, thereby learning the virtue of patience and careful observation (Ralston, 2011; Starbuck, Olthof & Midden, 2014). As such, they always excitedly provided information like: *"there are some small things growing in the patches"*. We explained to them that the *"small things"* are the *"shoots"* or *"leaves"* which will later grow stronger before the flowers begin to appear. This made the children look forward to the appearance of the first flowers, and the team observed that the children began to show interest in them. This is documented in the photo below as one of the children showed his awe and wonder at the appearance of a flower:

Photograph 8.1.2a: A child showing interest in flowers.

From the moment the children started seeing flowers that had started to appear, they showed deeper awareness of the need to care for the growing flowers. The team began to observe their excitement as they became more engaged with tending the patches. They could hardly contain their eagerness to run outside whenever it was outdoor play time. In fact, they always looked forward to being out in the garden to water the flowers every day. Their enthusiasm to tend the garden was always a beautiful sight to behold!

After months of tending the wildlife garden, the flowers too, responded to the children's care in their vigorous growth (Noddings, 1984, 2013) as the children were rewarded with a full bloom of wildlife flowers which presented a range of colours in the garden. The children looked at the flowers in awe, touched them, as well as commented on the colours of flowers or how high some of them could grow. Photographs of the wildlife garden are shown below and on the next page:

Photograph 8.1.2b: The wildlife garden in bloom

Photographs 8.1.2c: The wildlife garden in bloom

Children's personal experiences of nature as reported here became the building blocks for classroom enrichment (Blair, 2009) as the team continually sustained children's interest by supporting their learning such as by encouraging them to look at and complete life cycle puzzles e.g. flowers, to see how things change and grow; or talking about seeds and drawing flowers. In addition to promoting children's learning about how things grow, planned discussions were usually carried out with children in small groups about the growth processes. To make the teaching of growth process more vivid, practitioners supported children in planting seeds in transparent bags and clipped them to the display board.

The individual bags were carefully nurtured by each named child who had the duty to constantly water the seeds in them. They were able to see how the seeds opened to start bringing out stalks as shown on the next page:

Photograph 8.1.2d **Photograph 8.1.2e**

Photographs 8.1.2d & 8.1.2e: Seeds planted in bags to show growth process

This activity presented opportunities for the team to support children in learning about how growth occurs as well as the names of parts of a plant such as root, stalk and leaves. As the stalks grew longer, we supported children in taking them out into the garden to be transplanted in bigger patches. They also enjoyed tending the plants and watching them grow as they asked questions about growth process and what happens afterwards. They learnt that plants are living things with a life cycle and that they start their life from a seed and grow to become mature plants. They learnt that the seeds can only grow if the conditions in the soil are right for them. They saw how the seeds germinated in the bags and began to grow their first roots and leaves. The children also learnt that plants die off and their leaves fall off at the end of their cycle but that they start a new life by growing again. The children were enthusiastic on gaining this information and paid closer attention to the growing plants in the garden. They pointed out plants that were dying off due to the weakened stalks and leaves turning brown.

They saw as the plants died off and how new ones started growing again in the patches after a few months.

The children also took part in planting some spring bulbs such as large flowering mixed Crocus, mixed Sparaxis Harlequin and rockery mixed Tulip, as an alternative to planting seeds. This was to raise their awareness that plants and flowers can originate from either seeds or bulbs. Photographs of children engaged in planting bulbs are shown below:

Photograph 8.1.2f

Photograph 8.1.2g

Photographs 8.1.2f & 8.1.2g: Children planting spring bulbs

During planting, one of the children (male) held a Crocus bulb and commented that: "*This looks like an onion."* Our discussion now focussed on the fact that even though the bulb looks like an onion, it is not an onion. We further discussed that "*It is called a bulb. And it can be planted just like a seed."* The child tried to say the new name he has learnt by saying *"B-bulb?"* and I encouraged his new learning by adding: "*Yes, bulb. Sometimes, we can plant seeds to grow flowers, and sometimes, we can plant bulbs to make flowers as well."* The children were excited to learn the new word 'bulb' and showed off their individual bulbs in the photo on the next page:

Photograph 8.1.2h: Children showing off their bulbs.

Opportunities were provided for conversations to develop especially when children were outdoors in the garden and their curiosity become aroused as they interacted with their environment (Ritchie et al., 2010; Wilson, 2012). Such opportunities enabled the child to ask questions to learn something new such as 'bulb', as the Crocus bulb was big and certainly looked like a small onion. In situations such as these, the team needed to support children's learning by being attentive and ready to have discussions to enable children to gain new knowledge such as learning names of things and not leave them to think that it is an onion. The child in question (including the other children who were present) learnt a new vocabulary such as 'bulb' and this was made possible by my having conversations with them in an outdoor environment.

On another occasion, the children learnt a new vocabulary such as 'compost' as they interacted with their environment. This occurred during the initial stages of the study when I had to spread some compost onto the designated patches for planting. Some of the children watched as I carried out this task and one of them started this conversation:

Child (male): "*What are you doing?"*

Me*: "I'm putting in compost for planting."*

Child (male): "*Compost?* (makes a disgusted expression) *What's that?"*

Child (female): *"It's mud"*

Me: "*Yes, it's like mud. But it's called "compost. It's got things in it that helps plants to grow well. Would you like to help … spread it here?"*

As I put in more compost, the children looked on and we had discussions about what I was doing:

Me: *"This is to help the plants grow. It has a lot of food for the plants to help them grow. It's going to help the seeds grow very well into nice flowers. And I need all of you to help me to plant the seeds and I really need your help to water them. Is that okay?"*

Child (male): *"Yaaaay!* (excitedly) *We're going to grow sunflower seeds."*

Evidence from conversations such as those reported above highlight that apart from children's sensory learning experiences of various phenomena which can only be gained from the outdoors, supportive adults can also teach children names of things, places and their outdoor experiences (Fägerstam, 2012; Norðdahla & Jóhannesson, 2014). This was shown in the ways that the children's gardening experience enabled them to learn new vocabulary such as 'nectar', 'transplant' and 'bulb', thus highlighting the positive role of adults in children's learning through rich communication in conversation.

Further analysis of the events that I have narrated in sections **8.1.1** and **8.1.2** show their links to the natural (environmental) dimension of sustainable development. As discussed in Chapter Two, the natural environment provides the life support systems for all human and non-human life. Growing a wildflower garden on two disused areas in the outdoors has, on a small scale, the function of restoring and conserving a biodiverse ecosystem of insect and plant life. This action supports the principle of conservation as it ensures that the natural environment will continue to provide life support systems for living things on it. In addition, participants' actions that rest on the natural dimension of sustainable development link with United Nations SDG 15 that relate to 'Life on Land' which has the aims of protecting, restoring and promoting sustainable use of terrestrial ecosystems.

In addition, the ways the children voices were included in democratic decision-making, especially with regards to growing a wildflower garden and their choosing the kinds of flowers they wanted to plant i.e. sunflowers, all demonstrate the political dimension of sustainable development as it is evident that children are supported in acquiring knowledge and skills relevant for global citizenship. This also links with SDG 16 as the team have supported the creation of a peaceful and inclusive setting for the children. This is shown in the way power had been exercised fairly and democratically (Pascal & Bertram, 2012; Coghlan & Brannick, 2014) through action research (and equally drawing on praxeological research) in the setting especially with regards to how decisions were made about the natural environment. For instance, the children were encouraged to participate in decisions regarding the wildlife garden such as being allowed to plan and interact with a particular and intimately known space (Blair, 2009), by watering and tending the garden. The children's involvement in maintaining the garden through the mentioned tasks was worthwhile in capturing their interests (Starbucks et al., 2014).

Practitioners, too, were not left out as they also offered support in the decision to create the wildlife garden as well as maintaining it. In this way, practitioners and children were active participants in the living environment as they helped to determine what happened to the garden and not just merely reacting to events and occurrences therein (Ralston, 2011; Pascal & Bertram, 2012, 2018). Hence, the team listened to one another as well as to the children and supported them in articulating their thoughts as they asked and answered questions about their activities in the garden (Rinaldi, 2006). The team also supported the children as they made links between what they were doing in the garden with what transpired in their various homes, which shows how practitioners and children relied on their funds of knowledge to support one another (Moll et al., 1992).

Actions such as those mentioned are some of the ways that the team modelled respect to the children, thereby highlighting the social dimension of sustainable development. Respect is one of the vital ingredients of sustainable development which enables people to live harmoniously with others (Chan, Choy & Lee, 2009). Working with others in the garden enabled the children to develop some social skills such as listening and being listened to in a listening context; speaking and communicating needs to others; learning from others as they learnt to listen when other children spoke about

their experiences (Rinaldi, 2006), helped them in learning to show respect to others. The acquisition of these mentioned skills and experiences highlight Vygotsky's socio-cultural theory of how individuals gain experiences in social interactions in given contexts. These skills are necessary for sustainable living and they have been useful in fostering tranquillity (Chan, Choy & Lee, 2009) in the setting. The mentioned skills which children have acquired also translate to support for their good health and well-being as provided in SDG 3 and SDG 16 through an ethics of care (Noddings, 1984) within the setting. This is because a peaceful environment has the capacity to foster children's growth and development in all areas of their learning as the setting promotes inclusion for all the children through building a peaceful, just and inclusive environment.

8.1.3 Ants/worms and their importance to the ecosystem

The outdoors also provided opportunities for children to have first-hand experiences of some species of living organisms such as ants and worms (Blair, 2009; Young & Moore, 2010; Wilson, 2012). As children tended the wildlife garden, they sometimes encountered ants which always led to excitement. Some of the children would pick up the ants to examine them more closely, to describe how big or tiny some of these ants were. They sometimes examined the ants using magnifying glass; whilst some others would lower their hands to the ground, so the ants could crawl on them, whilst describing the sensation brought about the ants' movements on their hands as *"tickly"* or *"wiggly"*. Sometimes, a few of them exclaimed: *"I just like picking ants",* which prompted the adults with them to ask questions such as what they think the ants are doing in the soil. One of the children (male) responded: *"Maybe they want to eat all of the soil"*. This brought about a lot of laughter from the other children as they agreed with him. Another child (female) said: *"I think they're just walking around on there."* Their answers led to conversations that enabled me to share my knowledge of other characteristic functions of ants such as:

Me: *"Hmm … sometimes, they help the soil to get air, okay? And break the leaves to help plants and flowers grow".*

I learnt about planting when I was growing up, as my father was a keen farmer in addition to his job in the Civil Service in Nigeria. He planted different kinds of foods

like yams, beans and vegetables like spinach, corn and tomatoes in our back garden that he tended to every morning before going to work. I gained my funds of knowledge about the importance of some organisms to the ecosystem as I watched and listened to him on a few occasions when I joined him to plant in the garden.

One of the practitioners came over to see what the children were doing when she saw that they were focused on some things on the ground. When she saw the ants, she commented: *"There's some ants in there …"*; and I shared this knowledge about ants with her: *"Yes, ants … We've just learnt that sometimes they help the soil to get air by moving in and out …"* and *"Yeah … just like the worms … the earthworms help to aerate … you know … to get air into the soil by their movements."* The children engaged with this new knowledge about ants by showing consideration to these organisms whenever they came across them. They even went to the extent of warning off other children not to tread on them as "*they're* [ants] *helping the soil"*.

Sometimes, the children encountered worms in the soil and discussions would follow on what worms do and what they eat. Conversations between the children and adults enabled children to learn that, like the role of ants, worms, too, help to move the soil to give it air as they wriggle about, and this helps plants to grow well. They also provided knowledge that worms eat leaves and plants, which the children later understood as the need to make sure that leaves and plants are always available in the garden so that the worms will not be hungry. This was aptly captured by one of the children who commented: *"Plant more seeds so that they can grow"*.

Conversations reported in **8.1.3** showed that being outdoors offered all participants opportunities to learn about the ecosystem – a community of plants and animals, the interactions between these and the physical environment in which they live (Young & Moore, 2010). These interactions enabled all participants to renew their contact with nature (Brook, 2010) as they came to understand that nature is real and touchable (Starbuck, Olthof & Midden, 2014, Kiewra & Veselack, 2016). The participants learned about the importance of ants and worms to the soil, and this was made possible through their participation in the gardening project. Integrating the outdoor environment into children's learning is an important aspect of sustainable development as it offers them opportunities to learn about their place in nature and how to use it

sensibly (Norðdahla & Jóhannesson, 2014). This was made possible through dialogues and questionings between myself and the participants as they experienced features of the outdoors such as time, wonder, action as well as freedom (Blair, 2009; Brook, 2010; Wilson, 2012; Fisher-Maltese, 2016).

Observations of the children also showed that since the discussions about ants and worms, they always took great care not to harm the ants by not walking on them whenever they came across them in the garden. This care was also extended to spiders. We observed the children as they would bend down and watch these organisms more closely, let them walk over their hands and gently let them drop to the ground after their examinations of them. Their caring actions demonstrate their development of a more empathic view of nature, in this case insects and other living organisms, as they became interested in protecting them from harm arising from human behaviour. This evidences their positive attitudes towards living things that have developed from their interactions with the outdoors (Blair, 2009; Brook, 2010; Wilson, 2012; Fisher-Maltese, 2016). It is hoped that these caring attitudes which have been developed in the garden through their experiencing features of the outdoor such as time, wonder, action and freedom could operate as metaphorical gateways to their enriched adult experiences with the potential to translate into politically transformative action as environmental stewards (ibid.).

8.1.4 Bees and their importance to the ecosystem

The children's interest in bees was prominent throughout the research study. They had expressed their interest in bees since the idea of gardening was presented to them by the team. Their awareness of the importance of bees was defined as they displayed their understandings about bees at every opportunity whenever we were in the garden. Usually, they responded to questions like: *"Why do you like bees?"* or *"What do they do?"* as follows:

AM: "*Bumble bees collect pollen and then make honey*".

RD: "*They make honey*".

WD: "*Bees make honey and we eat the honey. They love making honey …*".

The team consolidated children's knowledge about bees using books in addition to child-friendly videos about bees. For instance, the video titled: "Our Bee Song" (NurseryTracks, 2014) is a 3:37 minute child-friendly animated video aimed at 2-4-year olds, the age range of the children in this study. The video tells children some basic facts about bees and these facts were relayed by them as evidence of their learning after watching the video: "*They live in a beehive"* and "*bees make honey".* Other children commented that *"they take juice from flowers"*; *"they use the juice from the flowers to make honey"* and *"they collect nectar."*

Some of the children expressed their knowledge that bees help in the pollination of flowers when some of them commented: *"The flowers needed a bee"* and: *"They* [bees] *get pollen from flowers because they use it to help the plants grow"*. Other facts the children learnt about bees focused on: "*the queen was feeding honey to the babies"; "We see queen feeding honey to the babies in a beehive"* and that *"they dance."* Comments such as these led to discussions that bees have a queen who feeds her baby bees with honey made from the nectar.

The children's comments that: "*Bees say Bzzzzzz",* enabled further discussions about where bees live with their knowledge displayed by their comments: "*They live in a beehive"*. In addition to these facts, further conversations about bees enabled sharing the knowledge that bees will not sting unless they are disturbed. This was gathered from comments such as: *"Do not touch them, I think"; "Don't touch them though … they may sting you",* and: *"Naughty bee".*

Discussions arising from children's comments enabled the team to allay their fears about bees and stinging as it had been observed that some of them were apprehensive about bees. This was especially through sharing of their individual experiences from home as was gathered from one child's (female) comments that: *"A bee sting my friend Jack in the garden and his mummy take him to the hostible"* [hospital].

Me: "*Aww, that's sad. I hope he got better after he returned from hospital."*

Child (female): "*Yes."*

This sharing of a personal experience opened the way for other children to provide examples of events from their respective homes: Child (male): *"I got bees at home".* Some children provided more information on bees:

Child: *I saw a bee …*

Me: *Where? Today?*

Child: *At my nanny's.*

Me: *At your nanny's … okay. And what did it do?*

Child: *It was buzzing all over the flowers.*

We discussed about why bees buzz all over flowers; how they get nectar and how they carry pollen from flower to flower and the children were able to make connections with the information from the video on bees. Whilst some children expressed their love for honey: "*I like honey"*, others shared family members' dislike for honey: "*My mummy doesn't like honey".* Children's abilities to link their learning in the nursery setting with their experiences at home through sharing of experiences demonstrate how their funds of knowledge about bees have been capitalised upon by the team to provide meaningful learning experiences for them (Moll et al, 1990). Teacher guidance was crucial for creating this learning context as it enabled the children to express their ideas and ask questions about bees (McClain & Vandermaas-Peeler, 2016). This is in addition to giving children time to think about issues under discussion.

8.1.4.1 Children's knowledge/learning about uses of honey

Most of the children have knowledge that honey is used as food. This knowledge had been expressed and shared with others at the initial stages of the study when they commented, for example: "*Bees make honey and we eat the honey."*

Due to the children's expressions of their love for honey, the team agreed that they should experience tasting honey during one of their mealtimes. Honey was provided, and the children were encouraged to use it on crumpets or toast. They enjoyed it and most of them said that it was *"Yummy"*.

To consolidate children's knowledge/learning about bees, the team agreed that some products which have honey as part of their ingredients should be shown to the children. A few products such as hand wash crème; shower crème; hair shampoo; baby soap; lemon and honey sweets and throat lozenges, that have honey as part of their ingredients were collected by the team and it was agreed that I should carry out this

activity with small groups of children. I sat with the children and showed them the products and discussed with them that they are made from honey. Some of the children recognised the products and one child (female) picked up the baby soap and commented: "*My mummy uses this for me at home."* Afterwards, the children were encouraged to use the hand wash crème during their handwashing routine before lunch.

Questions about bees and honey led to discussions that focused on other uses of honey such as its use for treating colds and coughs, especially when mixed with lemon, or just hot water. The children informed me that their parents usually gave them medicines for cold but that they would let their parents know more about using honey and lemon drinks whenever they caught a cold.

Some of the findings I have reported in sections **8.1.3**, **8.1.4** and **8.1.4.1** are linked to relevant dimensions of sustainable development. The practice of supporting children's learning about the importance of ants and worms is important for sustainability, and this rests on the natural dimension of sustainable development. It is the expectation that the natural environment will provide support for the non-human lives such as bees, ants and worms (UNESCO, 2002). Supporting the children to learn about the importance of these organisms to the ecosystem has the capability of enhancing their stewardship to the natural environment (Ralston, 2011). Their learning about how ants and worms help to aerate the soil for better growth processes means that they have been able to gain better understandings of importance of the organisms in their immediate environment (Blair, 2009), which would invariably lead to actions on their part to protect their environment and the non-human organisms in it from harm or destruction (Ralston, 2011; Starbuck et al., 2014). This view aligns with SDG 15 which focuses on life on land as the children will be able to preserve their natural environment to provide vital habitats for various species.

In addition, children's learning some basic facts about bees and their importance to the ecosystem show links to the natural or environmental dimension of sustainable development. Bees are a part of the non-human lives that are supported by the natural environment. Their actions as pollinators promote biodiversity as they help in pollinating fruit and flowers. This view supports SDG 15 which highlights that human life depends on the earth for sustenance and livelihoods. It is also estimated that plant

life provides 80% of our human diet. When bees pollinate flowers and help fruit and vegetables to grow, this would help to fight hunger (SDG 2) as they pollinate much of the food that makes diets healthy and tasty e.g. honey (Friends of the Earth, 2018). This awareness is linked to the economic dimension of sustainable development as the children learnt that bees, ants and worms help the soil so that plants and vegetables can grow well (United Nations, 2015). I have also stated in Chapter Five that as humans rely on these tiny insects for pollinating fruit and vegetables, agricultural growth that humans rely on as an important economic resource and means of development (SDG 8) will be promoted as it is estimated that it would cost the UK farmers £1.8 billion to pollinate their crops without bees (Friends of the Earth 2018).

The team's actions of supporting children's learning about uses of honey also rest on the economic dimension of sustainability. Gaining understandings and awareness of benefits of honey especially in learning that it can be used to cure common colds will support their good health and well-being in alignment with SDG 3, supports the children to become aware of the urgent need to protect bees as, even though tiny, they contribute in numerous ways to the economy. The children have been given opportunities to discuss and gain information which will enhance their awareness for sustainable development and lifestyles in harmony with nature. This view also aligns with SDG 12 which focuses on responsible consumption and production as the children were able to gain understandings of the effects of human's unsustainable actions on non-human organisms (United Nations, 2015).

The team's considerations of the forms of play which supported children's capacity to engage in meaning making was purposefully and effectively carried out through child-friendly video and books on bees. Their actions also align with the view that purposefully framed play is the type which allows practitioners to engage with sustainability concepts as well as the pedagogical strategies used in their teaching (Edwards & Cutter-Mackenzie, 2013). Their role in planning before play as well as interactions with children during the play sessions is highlighted as it is evident that the sessions were carefully planned for children's learning (Nikiforidou, Miles & Luff, 2015). This was shown in the ways that the rich discussions generated with the children demonstrated their knowledge/learning about the importance of bees to the ecosystem such as how they collect pollen and help to pollinate flowers; how they make honey which is a source of food; as well as how they are used as part of the ingredients in

some commonly used products such as hand wash crème and shampoo. Conversations such as these also show how participants gain knowledge and experiences in a social context as illuminated by Vygotsky's socio-cultural theory. As these participants co-create knowledge on bees which is meaningful to them in the setting, they do so whilst drawing upon their existing wealth of knowledge and experiences or funds of knowledge (Moll et al., 1990) which is based on how they understand the world they live in.

A few of the children were also able to learn new vocabulary such as *"bulbs"* rather than their commonly used expressions of: "*onions"* (Norðdahla & Jóhannesson, 2014). In this regard, purposefully framed play is intentional teaching as it supports children's learning about bees through discussions between them and the team by asking open-ended questionings aimed at ensuring better understandings of concepts (Sylva et al. 2004a' 2004b). The children were also seen as active dialogue partners whose thoughts and opinions are listened to by the adults around them, and this enabled the sharing of experiences and knowledge about bees (Rinaldi, 2006). The dialogues also represent action which is dependent on the content, children's interests and understandings as well as the team's efforts towards shared understandings (Ärlemalm-Hagsér, 2013a).

8.2 Children's knowledge of the natural world expressed through creative arts

Arts-based pedagogies are argued to be effective for children's exploration and understanding of the natural world (Ward, 2014). This assertion holds true for this study as opportunities for children to demonstrate their knowledge of the natural world through creative arts arose during the study.

8.2.1 Three-dimensional modelling activities

During children's learning about bees for sustainability, opportunities were provided for them to demonstrate their knowledge of bees through three-dimensional modelling activities with reused materials. Practitioners supported them by providing recycled materials as shown on the next page:

Photograph 8.2.1a

Photograph 8.2.1b

Photographs 8.2.1a & 8.2.1b: Children's creative work about bees

Another event that occurred during children's playtime in the garden led to the development of children's learning about their environment through three-dimensional modelling. The children discovered that a bird had made a nest in the bird house that occupied a corner of the garden. They became fascinated with this discovery and called the attention of the supervising adults who were with them. Practitioners picked up a few of the children who struggled to see the nest to allow them to see this wonder of nature and to satisfy their innate curiosity (Wilson, 2012).

Conversations between the practitioners and the children focused on the nest and how the birds sit on their eggs in the nest to make 'babies'. The children also asked questions about how birds make their nest. Dialogues between them and the practitioners enabled them to arrive at a shared understanding that birds make their nests by collecting and putting together bits of grass and any other item they feel will make their nests comfortable. This was an example of sustained shared thinking (Sylva et al., 2004a, 2004b). The bird house is shown on the next page:

Photograph 8.2.1c: Children's discovery – a bird's nest

To build on the children's current interests and understandings of this phenomenon of the natural world, practitioners supported them to re-create and interpret their understandings of the natural world, such as their knowledge of birds, nest, birds as well as flowers in the natural world, through creative arts (Ward, 2014). Children and practitioners created baby birds in a nest using paper clay with coloured feathers for their wings. Their nest was made with recycled cardboard and wrapped in brown paper as shown below:

Photograph 8.2.1d: Children's creation – 'baby birds in a nest'

As they worked, practitioners and children discussed about the need to look after birds and their babies as they are equally important in the environment. The children also talked about different colours of feathers of birds that have been expressed in their modelling.

8.2.2 Learning about bees through movement

The team also planned a few sessions for children to experience the bees dance known as 'Waggle Dance' through movement. This was intended to reinforce children's knowledge about the importance of bees to the ecosystem. In this planned activity, conversations with the children commenced with questions about how bees talk to each other. A few children commented that "*maybe they say 'bzzzzz'"* and *"Bees say zzzzzz".* One of the children (male) then said: "*They dance".* Another child (female) said: "*Do not touch them, I think. Bees talk, then they dance."*

This led to discussions of how bees talk to one another by using a form of dance called the 'Waggle Dance' that bees use in communicating with other bees to tell the direction of flowers. The children discussed how the bees will then be able to find more flowers to pollinate because of the dance. They were shown a child-friendly animated video titled: "Do the Waggle Dance" (JingalooMusic, 2014) that showed the dance steps of bees' Waggle Dance. After watching the video, the children learnt how to do the waggle dance steps with the help of the team.

As children's interests and knowledge about bees deepened, practitioners supported their learning by working with them to create a display board that provided information about their learning about bees for sustainability. Practitioners relied upon their funds of knowledge in the aspect of creative practice as evidenced in the collaborative creation of a display board used to support children's learning about the sustainability from the environment (Ward, 2014; Luff, Miles & Wagui, 2015). The display board included details such as children's comments about what they have learnt about bees, children's creative work that demonstrates their knowledge of bees as well as resources (books and information posters on bees) used in teaching them about bees. This can be seen in the photograph shown on the next page:

Photograph 8.2.2: Display board with children's comments about bees.

8.2.3 Painting and collage activities

Children's creativity and imagination developed as they interacted with the outdoor environment (Fisher-Maltese, 2016). As a result, children who had previously splashed paint about on papers now painted with purpose, as they attempted to make representations with paint and other materials and attach labels to their creations (Kiewra & Veselack, 2016). Their awareness of the flora and fauna in their environment through creative arts are shown on the next page:

Photograph 8.2.3a: Flower

Photograph 8.2.3b: Flower

Photographs 8.2.3a & 8.2.3b: Children's expressions of flowers

The children also painted pictures of bumble bees, butterflies, and birds to demonstrate their awareness of the fauna in their environment. Conversations between them and practitioners enabled them to express themselves and tell the practitioners what they painted. These are shown in the photographs below and on the next page:

Photograph 8.2.3c: Bumble bee in 'lots of colour'

Photograph 8.2.3d: Butterfly

Photograph 8.2.3e: Butterfly

Photograph 8.2.3f: Birds

Photographs 8.2.3c - 8.2.3f: Children's expressions of fauna

Children's creative expressions and representations of the natural world that developed from their current level of understandings and interests in their environment, is considered to be important for their learning about the natural world and for sustainability (Ward, 2014; Luff, Miles & Wangui, 2015; Luff, 2018a). These understandings were further used as starting points for discussions and observations as children gained awareness of how some types of birds make their nests and the materials used in doing so.

Practitioners' funds of knowledge (Moll et al., 1992) also supported their creative practice as was evidenced in the collaborative creation of a display board used to support children's learning about the environment (Ward, 2014). The display board below showed children's awareness and understandings of the natural environment as it contained features of their environment such as trees, flowers, birds flying in the sky as well as bird's nest, thus demonstrating how the outdoor environment supports children's creativity and imagination (Fisher-Maltese, 2016; Kiewra & Veselack, 2016).

Photograph 8.2.3g: D**isplay board of trees, flowers, birds and nest**

Participation in these creative activities such as painting, handwork or craft, embraced children's development of fine motor and coordination skills (Tarr, 2008; Luff, 2018a). In addition, practitioners were observed to develop an appreciation of the natural world as they constantly thought out new ways of engaging children's interests in the flora and fauna of their environment through arts-based pedagogies (Tarr, 2008; Luff, 2018a). This was due to their increased understanding of how the natural world can be incorporated into children's learning for sustainability (Luff, Miles & Wangui, 2015).

8.3 Activities provided for children and their links to the EYFS

The activities discussed in this chapter evidence some key principles of ESD and could be incorporated into the EYFS (Gilbert, Rose & Luff, 2015; Siraj-Blatchford, 2016; Boyd et al., 2017). These connections are shown in the table on the next page:

ACTIVITY	EYFS – AREAS OF LEARNING AND DEVELOPMENT	RESOURCES
Learning about conditions necessary for plant growth/ Children's learning about how things grow	**C & L –** Ask and respond to questions about their experiences in past and present forms. **PD -** Use large and small movements whilst planting and watering using watering cans and buckets, effectively **PSE -** Form positive relationships with adults and other children; Talk about past and present events in their own lives and in the lives of family members; observe plants and explain why changes occur.	Wildlife flower seeds Spring bulbs Watering cans Buckets Children's gardening tools Water Practitioners, children and researcher
Learning about ants and worms	**C & L -** Listening and responding appropriately. **PD -** Moving and handling: Delicately picking up ants and worms. **Maths -** Using everyday language to talk about size. **UW - O**bserving organisms and talking about them. **PSE -** Confidence in choosing resources for activity e.g. magnifying glass.	Live ants and worms; magnifying glass; Practitioners, children and researcher
Learning about bees and their importance to the ecosystem	**C & L -** Listening to stories with increased attention and responding with relevant comments, questions or actions. **UW -** Becoming familiar with the natural world through observations. **PSE –** Developing self-confidence and self-awareness.	Books – Bees love flowers; Nature's Tiny Miracles: Bees Videos: Our Bee Song; Do the Waggle Dance Practitioners, children and researcher
Children's knowledge of the world through creative arts	**C & L -** Follow instructions; answer questions about their experiences during creative sessions. **PD -** Use large and small movements to safely negotiate space; handle pencils for drawing. **PSED -** Try new activities and choose resources; play co-operatively; show sensitivity to others' needs and feelings; form positive relationships with others. **UW-** Observe and talk about features of their environment, animals and plants; explore and use media and materials to represent ideas, thoughts and feelings through design and technology, art, music and dance.	Videos: Bees' Waggle Dance; Our Bee Song; & The Little Earth Charter; Creative materials Practitioners, children and researcher

Table 8.3: Activities and their links to the EYFS

Due to the practitioners' busy schedule, I collated all the activities that we co-planned and implemented with the children to begin the process of making the necessary links of these activities with the EYFS. They also shared their pedagogical planning records with me by giving me access to the record folders. Doing this enabled me to capitalise on their funds of knowledge and practice about the curriculum as I was able to follow the trend of their pedagogical planning. I then created and shared the table with them for their comments. The connections to the EYFS were necessary as they provided answers to the research question to show how teaching and learning activities can be shaped to promote better knowledge and practice of ESD in within the existing curriculum framework and practices in an early years setting.

8.4 Summary

In this chapter, I focused on how teaching and learning can be shaped to promote better understandings and practice of ESD in the setting, whilst still aligned to practitioners' understandings of ESD and children's interests within the EYFS. This was possible because I was sensitive to the range of experiences, information and skills and knowledge that the participants have brought to the setting which have been acquired through their participation in family life. I also showed how participants' knowledge, understandings, skills and interests have become useful as potential learning resources for sustainability in the setting as they are shared with others (Moll, 1990; Vélez-Ibáñez & Greenberg, 1992).

My discussions highlight how participants effectively learnt for sustainability through cooperative engagement in tasks and activities emphasised Vygotsky's socio-cultural theory where social interactions are central to participants' learning processes. I also showed how participants co-created some basic knowledge and understanding of ESD to give confidence in introducing ESD into the EYFS curriculum as they worked collaboratively and experienced the freedom of being outdoors which opened many doors of opportunities for interactions and dialogues.

The methods of data collection adopted for this study have proved useful in gaining answers to the research question. Through exploration of events as they occurred in the nursery setting as I worked with the practitioners, teaching and learning activities

were collaboratively shaped to promote better knowledge and practice of ESD within the setting. This was with specific reference to how activities with a sustainability focus were intentionally co-planned for children by the team based on ideas from practitioner's or children's interests, whilst showing their relevance to the SDGs and importance for the early years. Another key element that I have highlighted in this chapter is my role as an action researcher that has enabled me to facilitate and support both practitioners and children in planning and learning for sustainability.

I also showed how some key principles of ESD provide strong structures upon which ESD could be incorporated into the EYFS through activities provided for children that explicitly linked to the EYFS. The next chapter will examine how participants gained care and connectivity to each other and to their environment whilst developing some lifelong skills that are necessary for sustainability.

Chapter Nine – Presentation and analysis of findings: Participants gaining care and connectivity to each other and to their environment

In this chapter, I present and analyse findings related to the main research question:

- How can teaching and learning activities be shaped to promote better knowledge and practice of ESD within an early years setting?

To answer this question, I focused on aspects of care and connectivity within an ethics of care (Noddings, 1984; 2013). The aspect of care became central to this study as it became prominent from observations of participants' everyday actions and interactions as they engaged with sustainability issues in the setting. The team's actions of supporting children's developing knowledge of sustainability through planned and spontaneous activities placed emphasis on the requirement for ECEC settings to be fostering grounds for caring relations that are necessary for sustainability learning (Noddings, 1984, 1988, 2005, 2012a, 2012b, 2013).

Observations, dialogues and reflections, enabled the team to gather 'live' data from social situations as they occurred, especially those that arose spontaneously from participants' interactions with others (Cohen, Manion & Morrison, 2018). Observing the children also enabled us to see how they engaged with activities specifically planned for them.

Listening enabled participants' voices to be captured through their everyday conversations. It was a premise for fostering learning relationships as they listened attentively to one another by asking and answering questions (Rinaldi, 2006). Listening also enabled them to sustain their shared thinking as they arrived at shared understandings of events and situations (Sylva et al., 2004a, 2004b; Rinaldi, 2006). For a smooth narrative, I have included verbatim data using participants' exact words with the purpose of keeping the flavour of the original data (Cohen, Manion & Morrison, 2018).

I arrived at the findings presented in this chapter by searching for similarities in events and activities as they occurred. This enabled me to collate the findings into six themes as presented and shown in the table below. I analysed them with reference to literature from reviewed studies, and with reference to the theoretical framework, UNESCO (2010) four dimensions of sustainable development and relevant SDGs.

Themes	Sub themes
Children's morality	- Making moral choices about life on land: To kill or not to kill a worm - Children's justifications for the need to be kind to insects - To release/not to release a snail back into the grass
Literary explorations	- Using books to foster friendship - Raising children's awareness of other cultures
Children's agency	- Finding Reggie the rabbit - Children's interests and voices in planting sunflower seeds
Caring for self: Children's knowledge / learning to care for themselves	- Children's well-being and promotion of self-care - Children's knowledge/learning about road safety
Caring for others: Children's knowledge / learning to care for others	- Children's social skills of being kind and empathetic towards others - Children's values of care expressed through the arts
Caring for the environment: Children's knowledge / learning to care for the environment	- Children's knowledge/learning about food waste recycling - Children as environmental stewards

Table 9.0: Themes and order of presentation and analysis of findings

Like in the previous chapter, I rounded up the presentation and analysis of findings with a table to summarise the key activities that were undertaken with the children. This was to show how they link to the EYFS.

9.1 Children's morality

As children interacted with each other, adults and their environment, they began to show some positive moral attitudes towards some living organisms that are necessary for sustainable development. The attitudes developed from their engagement in various activities that allowed a diversity of dimensions for their moral discoveries in the setting. This development echoes the view that morality results from intersubjectivity when individuals interact and communicate with others (Johansson, 2006). As children engaged with each other and their environment in this study, opportunities arose where discussions arising from their interactions enabled them to learn about morality under certain conditions. These conditions are discussed in the following sections.

9.1.1 Making moral choices about life on land: To kill or not to kill a worm

This spontaneous event reported here occurred during one of the children's play time in the garden. It was a hot day and most of the children played in small groups outdoors. I observed a small group of children (one male and three females) in the Bugs' Area huddled together with attention focused on something that was on the ground. On moving closer, I saw that their object of scrutiny was an almost dried out worm on the ground. On noticing my presence, one of them (AL, female) reported that one of them (AN, female) had been trying to kill the worm. On asking AN why she wanted to do that, she calmly told me that she wanted to *"dead"* it (meaning to 'kill' the worm). I asked her why she wanted to kill it, and she still insisted that it was her intention to do so. I then questioned the children if it would be nice to kill or not to kill the worm. The three children who had insisted on not killing the worm stuck to their decision by emphatically saying "*no"*. When I asked them why they felt the worm should not be killed, one of them, AL now gave her reasons while the others listened as we discussed the situation:

AL: *"It's not good to kill it."*

Me: *"Why is it not good?"*

AL: *"They help us…"*

Me: *"How do they help us?"*

AL: *"You put them in the mud … and they go inside … and they give us air.*"

Me: *"That's good … what else do the worms do?"*

AL: *"They help flowers to grow."*

After listening to AL's reasons to spare the worm's life, all the children (except AN) agreed that it was "*not nice"* to kill the worm. They were emphatic in their decision not to kill the worm as they faced AN and tried to convince her (with their hands spread out in a pleading manner) by repeating: *"it is not nice to kill the worm!"* After listening to the children, I then asked AN if she agreed with the other children's decision not to kill the worm and she now said *"okay"* (in a small voice) and that she does not want to *"dead it"* [kill it] anymore. AN's decision could have been a result of defeat or embarrassment, but it highlighted how children's actions can be influenced through reactions from others. It is also difficult to say whether they would have acted differently if all of them had agreed to kill the worm. I am aware that my presence could have influenced their thinking and not because they were convinced by the morality. But it is evident that the children engaged with an issue that was of concern to them. The moral value of kindness to the worm they displayed was achieved by the support of an adult who helped them to think and reflect on their actions (Sylva et al., 2004a, 2004b; Johansson, 2006, 2009; Pramling Samuelsson & Park, 2017).

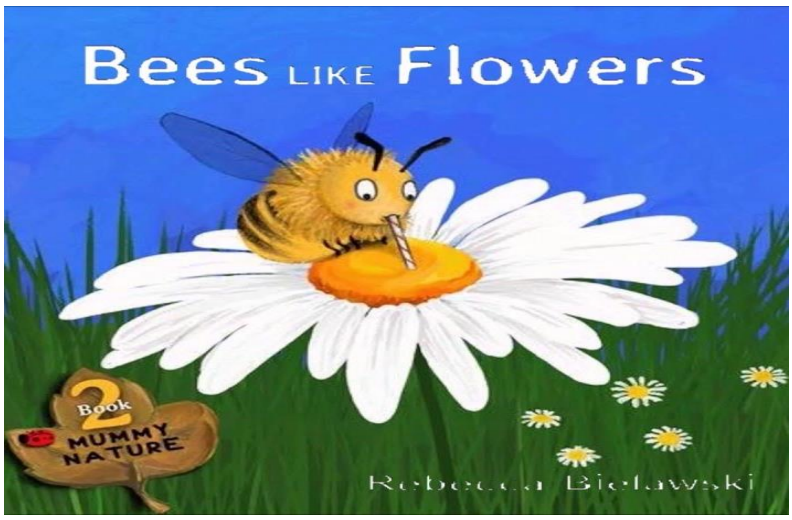
Suggestions about what next to do with the worm included putting it back to where it was found or putting it in the grass. We carried the worm to a cooler the spot in the grass, but it did not move, and AN insisted that it was now dead. I asked the others if they thought this was the case and they said no, because its skin was still soft. When they could not work out what to do next, I suggested that we could try pouring water on it to cool its body. The children agreed and helped to get some water and AL helped to pour it on the worm. After a little while, the worm wriggled, moved deeper into the grass and out of sight. The children were happy about this and we discussed further why it is important to respect all life on earth.

Actively listening to the children's arguments and giving them enough time to weigh their options show my recognition of their rights as moral citizens through debates as they challenged each other's opinions and developed their own ideas (Johansson, 2006; Rinaldi, 2006). This is important for their learning for sustainability as they have shown respect (a cornerstone of responsible global citizens) for one another and to a

member of a non-human species, a worm (Haas & Ashman, 2014). The children's comments that worms go inside the mud and *"they give us air"* and *"they* [worms] *help the flowers to grow"* demonstrate their developing understanding of the importance of worms to the environment, and their learning to care for them (Noddings, 1984).

9.1.2 Children's justifications for the need to be kind to insects

Children were also able to express moral judgments about living things during a planned book reading session on bees. The team had agreed that I should read a book titled: *Bees Like Flowers* (Bielawski, 2014) shown below, to small groups of children to consolidate their knowledge about bees.



Photograph 9.1.2: The book – *Bees Like Flowers*

The book provides information about how bees like bright flowers growing in the ground and how they take sweet nectar from these flowers. It discusses how pollen sticks to the bees' feet when they leave the flowers, and how pollen is taken to other flowers or to other blossoms of trees to help make new flowers. More basic information about bees focus on their home called the hive and how the queen lays eggs in the hive. The bees make honey in the hive with the nectar and give it to their babies. The book raises children's awareness that bees will only sting if someone frightens them with the final warning for humans to let them carry on with their work without disturbance.

During the reading session, children discussed their fears about bees, especially on how they sting people. For instance, one child (female) said: "*They sting. Bees sting us*." I reassured her by responding that: "*They don't sting all the time."* When I questioned them by asking: *"Why do you think they sting?"* some of the children responded thus:

J (male): "*Because we hurt them."*

E (female): "*Because we're not nice to them … then they will not be nice to us."*

M (female): "*We need to be nice to them so that they can be nice to us."*

I questioned them further on what we could do so that bees will not sting us: "*If they sting us because we hurt them, what do we need to do?"* The children responded in the following ways:

J (male): *"Don't hurt them."*

B (female): *"We don't hurt them."*

E (female) went as far as including ants that are smaller than bees in her justification for kindness to insects, by stating: "*Even the ants … we should be nice to them and not hurt them."* E was emphatic in her justification for kindness to these insects because when I asked her why we should be nice to ants, she only retorted with conviction: "*Because we need to be kind to them."*

After listening to their need to respect livings things as they have the right to life, I drew their attention to the bugs that killed some flowers in the garden. Some children suggested: *"shake it off"* whilst others said: *"pour water on them"*. They did not suggest that we should kill the bugs. These developments, in my view, demonstrate their understanding of objectives, people and actions especially that bees sting because *"we hurt them … and we're not nice to them"* (Engdahl & Rabušicová, 2011). The children's responses also demonstrate their growing funds of knowledge of causes and consequences of human actions on bees gained through participation and discussions either through family life or elsewhere (Moll et al., 1990). Their positive responses can also be analysed from the 'Earth Stewardship' world view of sustainable development

that involves eco-centric, rather than anthropocentric, ways of thinking as their discussion moved from bees to *"even the ants"* that are so tiny (Davis & Elliot, 2014).

Children's justifications for kindness to insects raised within me an awareness of their naivety in assuming that if humans do not hurt insects, then the insects will not hurt them. I made a mental note to discuss with them later whilst outdoors that insects are different from humans and that they can bite for different reasons. This was to prevent them becoming disillusioned if they ever got bitten.

9.1.3 To release/not to release a snail back into the grass

Children's developing moral values as well as the care extended to living things was observed during one of their outdoor experiences in the garden. A child (male) found a snail and put it on a leaf. He brought the snail over to where I was, and, together with a small group of children, we examined the snail together. As the snail moved slowly over the leaf, conversations about snails ensued. I asked the child: "*What do snails eat?"*. Two children (T and D, males) responded: "*Leaves ... grass ..."* Further questions focussed on the snail's shell as I asked: "*What's this on its back?"* The child who had the snail, T (male) responded: "*Shell"* and when I asked: "*What does the shell do for the snail?"*, he answered thoughtfully: *"Home."* I re-echoed his answer to check his understanding by stating: "*Ah! So, the snail lives there?"*, to which he responded with a firm "*Yes,"* and demonstrating his funds of knowledge about snails (Moll et al., 1992). After a while, the child began to put the snail back into the grass. When I asked him why he was returning it into the grass, he said: *"We've had it for a long time ..."*

On this note, it is not clear if the child acted out of a sense of morality, as he could have got tired of playing with the snail and lost interest in it. Even though he appeared reluctant to the snail go, he released it into its natural habitat. This action demonstrated positive attitude of care on the child's part towards the snail (Noddings, 1984). As sustainable development is viewed as a moral precept linked to notions of fairness (UNESCO, 2002), releasing the snail into the grass can be seen as the child's developing sense of morality that is necessary for sustainable development in his ability to perceive his relationships with others and the natural world within an ethics of care.

Children's emotional bonding with the natural world began to affect their behaviours in positive ways (Brook, 2010; Wilson, 2012). They began to demonstrate caring actions towards some non-human organisms and acknowledged contributions that these organisms make to the ecosystem: *"they give us air"*; *"they* [worms] *help the flowers to grow."* and "e*ven the ants … we should be nice to them and not hurt them."* Their actions and comments align with SDG 15 that relates to life on land with the need to respect organisms that are key to the ecosystem and halt biodiversity loss. Actively listening to the children and supporting them to act in line with their ideas is also shown through the lens of the political dimension of sustainable development (Engdahl & Ärlemalm-Hagsér, 2008, 2015). Listening also honoured their rights to be involved in issues of great concerns to them (UNCRC, 1989; Mackey, 2012).

Children were also able to satisfy their innate curiosity (Ritchie et al., 2010) and share their knowledge and experiences about snails and other organisms with other children and adults from their interactions with others in the natural environment of their socio-cultural context (Vygotsky, 1978; Rinaldi, 2006). Within the socio-cultural context, children and adults interacted with one another and gained understanding of the world through discussions and where opportunities were available for them to ask and answer questions (Rinaldi, 2006). Children who initially had fears of holding insects and other organisms found in the outdoors began to gain confidence in observing organisms more closely (see Photograph 9.1.3 on the next page).

Children's changing perspectives in positive ways have been shown as they appreciated the natural world and social world, especially through showing care to their peers and insects, enhanced bonding with other children, adults and the natural world in social interactions (Elliot and Davis, 2004; Chawla & Cushing, 2007; Blair, 2009; Ritchie, Dunn, Rao & Craw, 2010; Wilson, 2012; Warwick, Warwick & Nash, 2018). They began to see themselves as *part of* nature and not *apart from* or separate from it (Louv, 2008).

Photograph 9.1.3: A child holding out a snail

9.2 Literary explorations

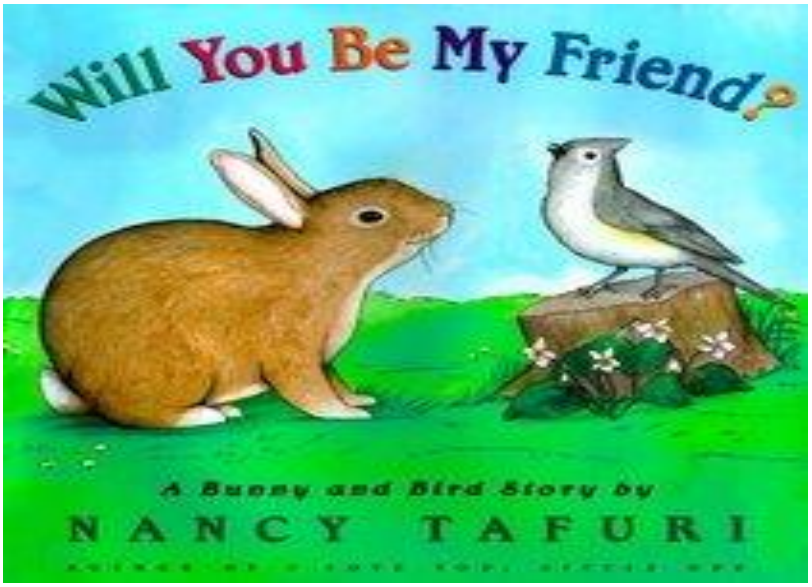
Children's literature is a powerful tool in raising children and young people's awareness to foster their active engagement with, understand as well as take responsibility for the creation and enjoyment of a sustainable future (Reid, Payne, & Cutter-Mackenzie, 2010). The team planned for children's learning for sustainability using child-friendly books with a sustainability focus to present sensitive or difficult concepts to children in this study. We were also aware that children's understandings of sustainability issues are still worthy of note, even if they cannot be compared to those of older people (Spearman & Eckhoff, 2012).

9.2.1 Using books to foster friendship

My observations of children in the setting showed that some of them had difficulties with maintaining friendships with others. This usually became evident whenever a child came into a play area and another child said: *"I don't want to play with him/her"*, whilst others did not want to be with anyone else except their key persons. They usually cried when the team made attempts to encourage their interactions with other children. Our attempts to playfully integrate these children into the nursery's routines did not usually meet with success, and this took up much of the practitioners' time. On other occasions, the children's attachments to their friendship 'groups' did not allow them to admit other children into those 'groups'.

My discussions with practitioners on how best to manage such occurrences led to our decision to use books to support children to benefit from friendships with others. We decided to use a book titled: *Will You Be My Friend?* (Tafuri, 2000) shown on the next page, to present the awkward issue of maintaining friendships among them. The book is about a bird and a rabbit who both lived in an old apple tree. The rabbit had tried hard to make friends with the bird, but his attempts had been futile as the bird was very shy. As the bird lived at the top of the tree while the rabbit lived at the bottom, making friends was not an easy task. An incident that occurred one day changed everything between the two of them. It rained heavily one day to the extent that bird's home was wet, and she started to cry. This made her accept the rabbit's invitation to spend the night in his home. When bird discovered the next day that her home has been ruined by the rain, the rabbit, along with his two other friends (chipmunk and squirrel), helped bird to rebuild her home.

With the practitioners' agreement, I read this book to the children in small groups to enable them to discuss their ideas of friendship. I asked them if they have friends and what they do to help their friends. Their responses such as: *"I give them water when they need it"*; *"I help them to dress in their princess dress"*; "*I play with them"*; *"I help them to tidy up"*; *"I help them to wee and poopy"* [meaning to help with toileting]; *"I squeeze them and give them a cuddle"*; and *"I give them sauce"* [at the dinner table]; provided examples of their understandings of 'friendship'.



Photograph 9.2.1a: The book – Will You Be My Friend?

The topic of friendship led to conversations about how helping others can make people feel better, especially when reference was made to how the bird felt after receiving help from the rabbit. The children were able to make comments such as: *"I feel better when I have friends"* and *"It is nice to help friends."* The conversation also focused on how being helpful to another person can help us to gain new friends and make everybody happy. We also discussed how they would be able to do many things together as a team when they are happy with each other. On this note, one child (male) rounded up the discussion with his comment that: *"It's nice to be kind to your friends because it's being helpful*."

This strategy of using children's books proved to be useful in fostering friendships among the children. The team encouraged children to ask other children they normally did not play with to join them in their games. Sometimes, this strategy worked, whilst it failed on a few occasions. It was observed that ideas from the book opened the pathway for efforts on children's part to make friends with children from other friendship groups in the setting.

An event that evidenced this achievement occurred during Phase 3 of this study. I was with two children (both female) BS and AW when we noticed another child BB (female) standing alone as her key person needed to attend to another child. BB is one

of those children who preferred to be with their key person all the time. I had tried to make friends with her on many occasions without success, and the situation was the same for most of the other children. BS noticed BB standing alone and informed me that BB is always alone. I asked BS why she thought this way, and BS replied: *"I think she* [BB] *might be very shy."* I then asked BS and AW what we could do to make friends with someone who is shy. They replied: *"say hello"*. I then encouraged them to say *"hello"* to BB, but they, too, felt a bit shy to do that. I then reminded the children about the story of the rabbit and bird: "*Will You Be My friend?*" They remembered the story and even reminded me of the incident of the bird's home getting flooded and how the rabbit helped her to rebuild her home. I then encouraged them that we, too, could help BB to feel welcome.

Together, we went over to BB and invited her to come and join us on the seat - and she did! BB sat with us and to our surprise, began to tell us about her home which she said was *"far away"*, and family. She told us she would like to show us her family and then took us to the display board titled "My family" that contained photos of children and their families. BB located the photo of herself and her family on the display board, and told us about her father, mother, older sister and baby brother. It was interesting to see how she transformed from a shy little girl to a talkative one. She was happy to share information about her family and this enabled BS and AW to equally share theirs with her. We came back to the seat and the three girls began to play together. Since that event, BB formed a close bond with those two girls and she also started to interact with the other children in addition to being friendlier towards me.

The "My Family" display board is one of the strategies used by the setting to help settle in children who are new to the setting (see Photograph 9.2.1b on the next page). It proved to be effective in helping to establish bonds among children and among children and practitioners. It helped children to make connections between home and setting as they were able to talk about their families. In addition to the display board, practitioners used other strategies such as group games of bowling or playdough with peers, playing 'catch', rolling ball or singing in small groups. Most of these activities were specifically planned to encourage building friendships or for forming bonds with others.

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Photograph 9.2.1b: The display board – 'My family'.

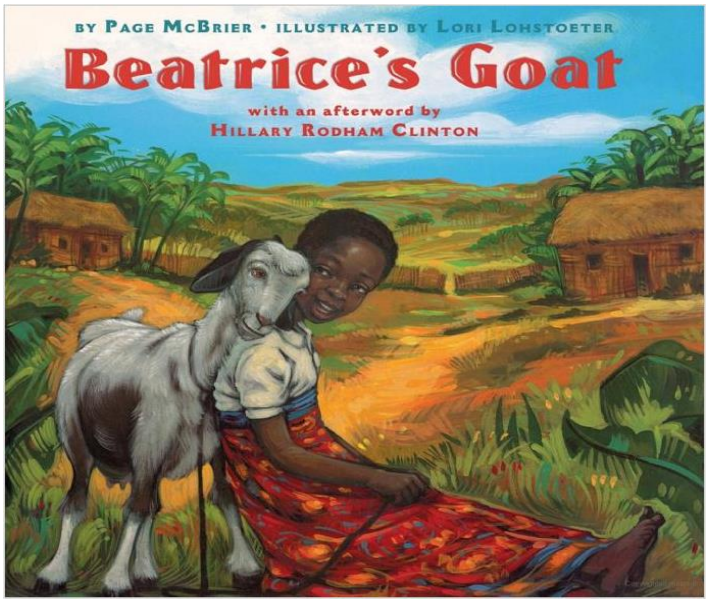
Fostering friendships amongst children and adults in the setting is important for sustainability as friendship enables individuals to work together in harmony. If the reverse is the case, then it would become almost impossible for any kind of learning to take place, especially for children. In addition, the bird and rabbit story told in simple language with opportunities for children to make contributions and ask questions was useful for their literacy development as well as teaching them about values that can help them make friends. Discussions that arose from the particular story were observed to have positive changes in the children's behaviour, attitudes and actions, all of which have contributed to the fostering of harmonious relationships among them in the setting (Chan, Choy & Lee, 2009; Reid, Payne, & Cutter-Mackenzie, 2010).

9.2.2 Raising children's awareness of other cultures

Raising children's awareness of another culture is important for sustainability as it enables them to have better understanding of other people's lives, as well as recognise and challenge inequalities (Spearman & Eckhoff, 2012) The team decided to carry out this activity as a result of my interactions with the children as they asked me questions about where I come from, and why my skin, hair, colour and texture is different from theirs (due to my African-Caribbean background). Other questions they asked focused on whether I have got children (to which I responded in the affirmative) and also

whether they go to school, led to my discussions with the practitioners on how best to promote cultural as well as global awareness in children.

We agreed and planned another book reading activity to raise children's awareness of another culture. With the practitioners' agreement, I selected a book titled: *Beatrice's Goat'* (McBrier, 2001) with its setting in Uganda, East Africa (see Photograph 9.2.2 below).



Photograph 9.2.2: The book – *Beatrice's Goat*

The book is based on the true story of a young girl called Beatrice who longed to go to school but could not do so because her parents were poor. One day, her family received a goat as a gift from a non-profit organisation (Heifer International) which helps families in poverty to become self-sustaining through education, community development, as well as eco-friendly agriculture (Spearman and Eckhoff, 2012). The family were able to stabilise themselves economically, as Beatrice was finally able to go to school through proceeds from selling the goat's milk to villagers. They also gained nutrition and income, retained their local cultural practices and kept their environment healthy, and these are all features of sustainable living practices.

The children were visibly aghast on learning that Beatrice could not go to school. One child (female) immediately asked: *"Did she have chickenpox?"* On learning that Beatrice did not have chickenpox and that her inability to go to school was because her parents were poor, the children immediately began to make suggestions about how they could help her. When one of them said: *"Can we help her?"* I responded that it would be a good idea to do that, and on asking how they could help Beatrice and her family, some of them suggested: *"Give her lots of money"; "Give money to her sisters and baby."* Their responses demonstrated their limited knowledge about challenges that some children could face because of poverty, as the only time they themselves are not able to attend school is when they are ill, hence their questioning if Beatrice had chickenpox. The book helped to challenge their preconceived ideas (Medress, 2008) about how other children live in other parts of the world, especially when it relates to one of the basic provisions like education that is taken for granted, in their context, but which some children in less-developed countries lack. These actions demonstrate that children can be compassionate about a different culture and its economic system as they had been made aware of differences in their lifestyles (Spearman & Eckhoff, 2012).

The story about Beatrice's unique family was used as a 'mirror' to raise children's awareness of another culture which is different to theirs, thus helping to bridge the gap between their personal life and the one they were reading about (Medress, 2008). They were also able to understand their place in the world from comments by one of them: "*I don't live in Africa … I live in Essex"* (Medress, 2008).

Children's developing skills like confidence and caring, and those which foster attributes of empathy, compassion and respect, through literary explorations in **9.2.1**.and **9.2.2** promoted learning for sustainability and for global citizenship. The book: "Will You Be My Friend?" was effective in modelling and teaching children about how to live in harmony with others. It helped children to show empathy to others and to make new friends. Some children asked for the book to be read to them several times during quiet periods and they appeared to reflect on the issue of being kind to others through friendship. This development supports the principle of appropriate development of sustainable development that enables children to support themselves in long-term ways through skills gained, such as those gained by BB that gave her

confidence to make new friends to support her learning and development throughout her remaining time in the nursery setting.

The book reading sessions are linked with the social dimension of sustainable development consisting of systems that provide ways for people to live together peacefully, equitably and with respect for human rights and dignity. The social dimension of sustainable development supports the principle of sustainable living that relates to peace and equity that have encouraged all participants to live harmoniously together whilst having their basic needs satisfied in fair and equitable ways (UNESCO, 2002). The skills align with SDG 16 that focuses on peace, justice and strong institutions. The activities led to the ongoing promotion of a peaceful, inclusive and harmonious environment in the setting, as otherwise, there will be division that can lead to chaos, thus preventing the achievement of inner and outer harmony. The setting's environment has supported children's development of values such as compassion and harmony, values that are important for sustainable development through a peaceful environment that ensured children's well-being as stipulated by SDG 3. Children's inner harmony extended to others through their caring attitudes towards others as they experienced the beauty of living harmoniously with others (Chan, Choy & Lee, 2009).

9.3 Children's agency

Children's need to be involved as active stakeholders and participants on issues concerning themselves, others and the environment for sustainability learning was evident in this study. Their reciprocal and simultaneous encounters with the outdoor environment showed their agency as a transactional, open and becoming process, where they took actions in situations to achieve results, rather than what they possessed (Caiman & Lundegård, 2014). Their agency was also demonstrated in their anticipations towards problems that are of utmost concerns to them, how they take actions as well as how they resolve the issues (ibid.).

9.3.1 Finding Reggie the rabbit

Children's agency was captured after an incident concerning the disappearance of Reggie, the nursery rabbit. The children had arrived at the nursery one morning to discover that Reggie had disappeared from its cage. Someone must have accidentally left the cage door open overnight! The children were upset and expressed their sadness about the incident by commenting: *"Reggie has gone away"; "We will never see Reggie again"; "Reggie will never come back to us";* Despite their sadness, it appeared that all hope was not lost as one of the children (male) stated: *"Maybe it might miss me and come back."*

The children demanded that the rabbit must be looked for within the nursery garden. Practitioners supported them in searching the entire garden (see Photograph 9.3.1a below), but the rabbit was not found.

Photograph 9.3.1a: Children looking for Reggie the rabbit.

Another child (male) suggested that a carrot trail should be put out in the garden with the aim of enticing the rabbit back to its cage. Practitioners acted on children's suggestion by providing carrots that the children laid out on the ground (see Photograph 9.3.1b on the next page):

Photograph 9.3.1b: Child putting up a carrot trail

The children also expressed their concerns and care by suggesting that a poster should be put up for finding the rabbit. The practitioners acted on these suggestions by collecting the children's ideas and words on paper and made two posters that were posted in the nursery's and Centre's reception areas.

Giving children opportunities to speak and be listened to, in addition to validating their thinking and supporting their actions, demonstrated the significant role of children as active participants on issues of great concern to them (Davis & Gibson, 2006). The learning process that occurred from the loss empowered the children in providing suggestions regarding how the rabbit could be found, and demonstrated that they, too, have thoughts, ideas and knowledge about issues in their environment. They were aware that posters should be *"put up"* to find someone or something when lost (see Photographs 9.3.1c & 9.3.1d on the next page). They also knew that a carrot trail could act as enticement for the rabbit. Their suggestions evidenced their participation in some family activities that have provided them with their funds of knowledge (Moll et al. 1992) and these became useful in their search for the missing rabbit. Their agency in this instance is their conscious decision-making about the rabbit's disappearance that is a display of their caring attitudes and anticipations towards it (Caiman & Lundegård, 2014; Noddings, 2013).

Photograph 9.3.1c

Photograph 9.3.1d

Photographs 9.3.1c & 9.3.1d: Posters with children's comments

Actions that supported children in looking for the rabbit were dependent not only on listening to them about what actions to take, but also on having opportunities to

implement those actions, a capability sometimes thought of as beyond young children (Gambino et al., 2009). When children are supported by understanding practitioners in an early years setting, they will be able to care for other living things such as animals within democratic processes as displayed in the reported event (Engdahl & Rabušicová, 2011), thus validating their rights on issues of concern to them as stipulated by United Nations Conventions on the Rights of the Child (1989).

Unfortunately, Reggie was never found. Practitioners took time to explain to the children that as the setting was surrounded by a woodland, the rabbit could have disappeared into it and that made it impossible for further searches. The children understood this and resigned themselves to the fact that Reggie the rabbit might never be found.

9.3.2 Children's interests and voices in planting sunflower seeds

Alongside the wildlife gardening, children's interest in planting and growing became evident. This led to suggestions by a few of them to plant some seeds which they could look after. The team agreed to support them in this aspect to plant sunflower seeds in newspaper flowerpots that they would take home to care for and be encouraged to report on the growing process via their parents through e-mails to the nursery.

We gathered old newspapers, compost and sunflower seeds to use with the children. We folded the newspapers into individual flowerpot shapes and added compost to keep the flowerpots firm (see Photographs 9.3.2a & 9.3.2b). Using old newspapers for flowerpots reaffirmed our commitments to responsible consumption patterns of resources that is linked to Sustainable Development Goal 12 (UN, 2015). Our understandings of the environmental and social impacts of products like plastic flowerpots (that could end up in the oceans or landfills and will not decompose) enabled us to make the informed choice of using old newspapers. Newspapers are easily biodegradable and cost-saving due to opportunities for re-use. Due to practitioners' limited availability during their working hours, they agreed that I should carry out this activity with the children.

The planting activity with the children took place individually in quiet areas to enable us to discuss more about caring for their seeds. The children always showed their enthusiasm by saying: *"I'll like to plant one,"* or showed their knowledge of planting

by commenting: *"I know how to plant one"* and: *"I just put it on like this"* (showing me by putting the seed inside a hole made by them in the flowerpot). The children's actions of making holes in the flower pots showed their practising of fine motor skills in picking up seeds to put in holes for planting (Starbuck et al., 2014). Further discussions showed their knowledge about how to care for their seeds to help them grow when they commented: *"Give it water."*

Photograph 9.3.2a

Photograph 9.3.2b

Photographs 9.3.2a & 9.3.2b: Newspaper flowerpots with seeds growing

The children's excitement about growing their own sunflower seeds cannot be captured with words as it would be an understatement. As the days went by, they also happily reported on the growth process with some of their comments shown below:

G (female): *"My sunflower's growing."*
E (female): "My flower's growing up, up, up."
E (female): "My flower's growing big like this …" (using her finger and thumb to demonstrate the exact size).

Another child (male) commented that: *"My plant is growing big and guess what? My nan* [grandmother] *put a stick near my plant so that it doesn't fall,"* and this led to

discussions about how sticks can be used to support plants and flowers to stay upright. Another child (female) also reported the fact that her sunflower was *"... really growing fast"* but her mother did not know what to do next when she stated: *"My sunflower is really growing fast, but my mum doesn't know what to do with it. So, my nanna's* [grandmother] *coming in to help. But we've decided to put it near the door."* Reports by the child about her mother's limited knowledge of plants led to questions about what could be done to the plant. The child agreed to leaving it by the door as suggested by the family. We also discussed other options such as leaving it in the newspaper flowerpot until it got too big for it, taking it outside to re-plant in the garden or getting a bigger flowerpot for it. The child was encouraged to present these suggestions to the adults at home about planting the flower outside.

The children's actions of watching and reporting the growth processes of their individual sunflower plants provides evidence of their developing patience as a virtue of sustainability by exploring in detail changes that were taking place daily (Starbuck et al., 2014). In addition, creating strong connections between children's interests and their existing knowledge of planting promoted learning, as their shared interests in planting of sunflower seeds created opportunities for their engagement in learning for sustainability (Siraj-Blatchford et al., 2002; Prince, 2010; Ward, 2014). Children's voices also influenced ESD as their rights and voices were listened to as stipulated by the United Nations Conventions on the Rights of the Child, 1989; Davis, 2010; Sylva et al. 2004a, 2004b; Pramling Samuelsson, 2011).

A suggestion by one of the practitioners during one of the staff meetings that parents could be encouraged to send in photographs of their children looking after their sunflower plants, encouraged parental engagement in the project. This was shown in the ways that some of the parents got involved in their children's learning and began to send in photographs of their children's sunflower plants as they grew and shared their children's enthusiasm for growing sunflowers (see Photographs 9.3.2c & 9.3.2d).

Sometimes, whenever I met a few parents outside the nursery setting, they reported to me on the growing stages of their children's sunflower plants. Sometimes, a parent commented: *"the flower is now growing like this"* (using her thumb and forefinger to indicate the length of growth). Other parents sometimes asked questions about actions to take regarding the plants (including how many times to water, or when to transplant

into bigger spaces) and would come over to the garden to see the wildflowers in bloom. Based on this development, parental involvement in their children's gardening project and the sunflower plants demonstrates the power of gardening to bring families together as it is obvious that the parents and carers, too, benefited from the experiences of planting and growing (Starbuck & Olthof, 2008). Parental engagement as observed in the project could offer insights into exploring the benefits of intergenerational dialogue by inviting parents and carers to join in the gardening activities (Wals, 2017). This would enable us to capitalise on their gardening knowledge so that we can collaboratively share and develop upon our existing knowledge to enhance their support and engagement in their children's learning. This could be a focus for consideration in future projects.

Photograph 9.3.2c

Photograph 9.3.2d

Photographs 9.3.2c & 9.3.2d: Children with their sunflower plants

Events reported in **9.3.1** and **9.3.2** showed how children's voices were listened to and acted on by the team. These align with provisions of SDG 16 that aim for the promotion of just, peaceful and inclusive societies as listening to them contributed to the promotion of a just and inclusive nursery setting. The team's responsiveness to children's needs encouraged their participatory and representative decision-making on actions to take regarding finding Reggie, following their instructions to *"put poster up"*; to search the garden grounds for Reggie; and to put up a carrot trail. Similarly,

validating children's voices in their request for planting individual sunflowers supported them in their growth in caring for the environment, and in developing their decision-making within the setting as global citizens. These actions highlight the political dimension of sustainable development, aligning with the principle of democracy where children have fair and equal say over actions on these issues (UNESCO, 2010b).

9.4 Caring for self: Children's knowledge / learning to care for themselves

The aspect of care, such as in caring for self, others and the environment, became one of the focal points in this study as a vital ingredient for sustainability teaching and learning. Participants' experiences that arose from their interactions with each other in the nursery setting highlighted care as acts done out of love and natural inclinations (Noddings, 1988, 2013).

The practitioners carried out actions that were far beyond those expected of them in their job roles. Instances of such 'caring' discussed under this section will be linked to children's learning for sustainability in the context of how the team supported children's knowledge / learning to care for themselves as they interacted with peer and others within the setting. This is followed by how children were supported in caring for others, and finally, how children were supported in caring for the environment. Each context will be rounded up with a general discussion of highlighted issues and analysed with reference to the theoretical framework, UNESCO (2010b) four dimensions of sustainable development and the SDGs.

9.4.1 Children's well-being and promotion of self-care

Practitioners usually promoted children's self-care like ensuring regular supply of water both indoors and outdoors in accordance with Section 3 of the Early Years Foundation Stage (DfE, 2017) on safeguarding and welfare requirements. This section states that fresh drinking water must always be available and accessible for children in settings (Section 3.47). Practitioners designated specific areas both indoors and outdoors for water and rest areas and ensured that the areas were clearly labelled and

well stocked with water in jugs and cups, to make it easy for children to serve themselves without help from adults (See Photographs 9.4.1a & 9.4.1b below).

Photograph 9.4.1a

Photograph 9.4.1b

Photographs 9.4.1a & 9.4.1b: Indoor and outdoor water areas

One notable aspect of self-care that was specifically re-focused on in this study was the promotion of handwashing. This was in response to my observations that some children were not washing their hands properly, especially after play and before meals. The children would just put their hands under running water and wipe them dry. My discussions with the practitioners enabled us to re-focus children's attention on this aspect of health and well-being which is important for sustainable development.

Handwashing is important in ensuring healthy lives and promoting well-being for all (SDG 3). Practitioners have the duty to ensure that children can access the highest standards of health through handwashing which links to good hygiene. When children are healthy, they will be able to live productive lives. Practitioners discussed the importance of handwashing with the children to let them understand how dirty hands could pass germs around, and this could make them sick. They also created and put up posters in the bathroom that provided a six-step visual information on handwashing: We turn on the taps; we use soap; we rub our hands together; we turn off the taps; we dry our hands; we put the paper in the bin (see Photograph 9.4.1c on the next page).

Photograph 9.4.1c: The bathroom with handwashing information

The steps were accompanied with some of the children's photos to demonstrate each instruction. Observations carried out by the team showed the effectiveness of this strategy as it prompted the children into carrying out the hand washing routine in the setting. Practitioners' ideas to use some of the children's photographs in creating the posters helped in maintaining their engagement with the activity. In addition to serving as effective reminders for them to wash their hands properly, it also gave the children a sense of belonging and ownership in co-creating the posters (see Photographs 9.4.1d below and 9.4.1e on the next page):

Photograph 9.4.1d: Handwashing instruction: "We turn on the taps"

Photograph 9.4.1e: Handwashing instruction: "We turn off the taps"

Observations showed that children began to follow the instructions and sometimes supported other children who were struggling to follow the instructions. I acknowledge that some children may perform these actions by imitating others and to receive praise from the team. The aim of supporting them to develop these skills was to foster in them the importance of a healthy lifestyle that starts with simple handwashing as stipulated in SDG 3. Supporting their development of these skills align with the principle of appropriate development as it ensures that children can support themselves in a long-term way.

9.4.2 Children's knowledge/learning about keeping safe on the road

In addition to handwashing, children were also supported in consolidating their knowledge about keeping safe on the roads. This activity was effectively woven into the setting's planning within the EYFS as it was part of the long-term planning for

children's learning. Practitioners supported children through role plays using outdoor traffic lights in the garden. Conversations focussed on why it is important to stop, look and listen before crossing the roads, and on zebra crossings, and they provided examples of what they did to keep safe:

D: *"I hold both of my mummy's and daddy's hands."*

J: *"Roads are very busy with lots of cars that can be dangerous. That's why we wait for our mummy and daddy."*

H: "*I cross the road with my mum. I hold her hand."*

A: "*We must hold our mum's or dad's hands when walking to nursery."*

J: *"My mummy drives, and I sit in a car seat with a belt."*

Afterwards, the children and practitioners worked together to produce a poster that showed a busy road with cars and traffic lights in Photographs 9.4.2a below and 9.4.2b on the next page:

Photograph 9.4.2a: A busy road with cars and traffic lights

Photograph 9.4.2b: Traffic lights

The relational aspects of care (Noddings, 2013) have enabled practitioners to support children in road safety. Opportunities for true, open dialogue and extended contact time between practitioners and children contributed to participants' discussions of the importance of the activity under focus (Sylva et al., 2004a, 2004b; Siraj-Blatchford, 2009). Supporting children's acquisition of road safety skills is a lifelong development that implicitly aligns with SDG 3 as they learn alongside others in a social context.

9.5 Caring for others: Children's knowledge / learning to care for others

Learning for sustainability also requires children to be able to care for others. This aspect of care will be discussed in the context of how children were supported in caring for others, starting from their development of some social skills of sharing, caring for animals, helping and showing care towards others.

9.5.1 Children's social skills of being kind and empathetic towards others

At the initial stage of the study, we observed that children were usually reluctant in sharing watering cans with others during the plant watering process. We observed

such occurrences whenever I asked the children who would like to give their watering cans to another child who had not had the chance to water flowers:

Me: "*You've all been working so hard at watering the plants and flowers today. But X* (another child) *has not been able to do this because he/she hasn't got a watering can. Who would like to give him/her one so that X can have a go?"*

Children's immediate responses: "*Not me!"* Or: *"I won't"*

Responses such as *"Not me!"* or *"I won't"* from most of the children made us think about how to reinforce the values of sharing, especially with those children who found it difficult to share. As we encouraged them to share with others, we began to observe their changing attitudes in this respect, and we praised them whenever they displayed sharing skills by offering their watering cans to those who did not have one so that they could have a turn. They later began to show eagerness in helping with some light chores in the garden that sometimes necessitated them to be patient and wait for their turns. This was not an easy task, but as time went by, they learnt the gradual acquisition of patience that is important for sustainable development (Ralston, 2011).

The view that educational institutions should encourage caring relations and for the curriculum content to be organised around themes of care was shown in the ways the team promoted caring relations in children (Noddings, 2012) as they modelled caring to the children whenever opportunities arose during normative teaching sessions. Children replicated practitioners' actions of giving hugs and cuddles to other children when upset; wiped other children's runny noses with tissues or supported new children to settle in.

One incidental finding from the study that stood out as distinct was the issue of love and intimacy because it is essential for sustainable development as well as captured the essence of care as used in this study. The development also positions love and intimacy slightly above the notion of care as it was shown to transcend it in an episode that concerned a child (male) and the practitioners. The boy had cried after being removed from the other children due to restlessness and not listening to the adults. When he was brought to sit in the area where I was engaged in an activity with a few children. I asked him to sit with me and then gently discussed with him about the need

to listen to the adults around him. We talked about how listening to instructions was good because it meant that everyone will be happy to carry out their different activities. The child listened to me but insisted:

"I only listen when they [practitioners] *give me a hug!".*

I gave him a hug and he even helped to wrap my arms around him better as he snuggled closer. His insistence on a loving and intimate caring relationship to enable him listen to adults was crucial to his joining in activities with others. After the hug, the child joined in with other children and carried on playing with them. I pointed out this issue with the practitioners to make them aware of some children's needs that demanded more acts of love and intimacy to enable them to function better as part of the group.

My descriptions of participants' actions in the aspect of caring for others shows that there is a lot of touch, love and intimacy arising from care in the nursery setting. Despite a significant increase in educational discourse which focus on caring relationships as central to learning (as this study is confirming), the aspect of love is rarely mentioned, yet, evidence abounds to show that love already exists, but subsumed in caring relations in early years settings (White & Gradovski, 2018). However, frequent reported cases of child abuse in early years settings have ignited fear and uncertainty among staff, parents and policy makers and this has led to policy frameworks that can negate love and intimacy, and this makes practitioners uncertain as to the kinds of touch or how much of love it is appropriate to feel for children in their care. This leads to love being highly regulated in practice even though early childhood educators are aware of the value of love and intimacy in their work with children (Page, 2018). Despite these uncertainties, practitioners in the setting were able to effectively manage these fears by balancing children's well-being and safety, with protecting them from dangers. To be precise, children expected and looked forward to these gestures of intimacy of hugs and cuddles between them and practitioners in their everyday interactions, and I observed that these intimate and caring gestures from practitioners have proved to be effective in supporting and maintaining a peaceful and harmonious setting for the children.

Supporting children to care for themselves and others helped to foster harmony within themselves and with others in the setting as the children worked cooperatively with

one another (Chan, Choy and Lee, 2009). Their emotional development was secure and contributed to their inner harmony. The inner harmony translated to their outer harmony and achieved the goals of tasks they worked (Yan & Fengfeng, 2008). This is a demonstration of the beauty of living harmoniously on Earth (Chan, Choy & Lee, 2009). The reported events have also shown that the promotion of a setting conducive to moral growth is necessary for sustainable development.

9.5.2 Children's values of care expressed through the arts

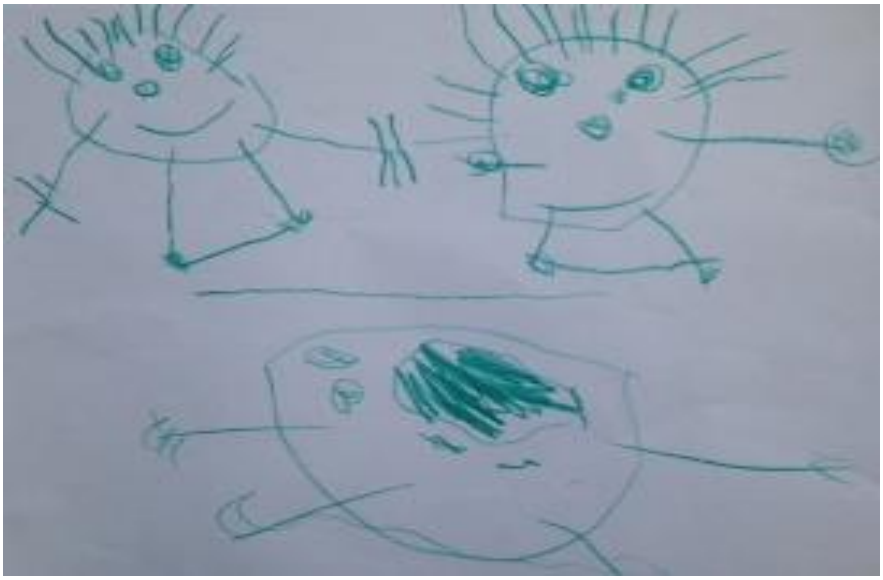
The first principle of the Little Earth Charter (2009) – Principle of Life – was used to raise children's awareness of the need to care for others. The activity was carefully planned by the team as one of the strategies designed to foster harmonious co-existence among the children, between children and adults and between all participants and their environment. This was with the aim of raising children's awareness to understand themselves and others, as well as their links with the wider natural and social environment (Yan & Fengfeng, 2008).

The Principle of Life focuses on respecting and caring for all living things, no matter how big or small and encourages children to treat all living things (not just human life as all life is important) with respect and consideration. Prior to showing the video, we explained the purpose of the activity to them. This was followed by questions about what the Principle of Life means and the adults responding: "*It means that we promise to look after everything on earth that has life"* and when discussions focused on things that have life, the children provided answers such as: "*Wiggly worm … mouse … flowers … elephants …a butterfly … and spiders …"*

We carried out this activity by showing the children a 4:35-minute animated video of the Principle of Life (see littleearthcharter.org). The video prompted questions like*: "Do we need to look after them all?"* The children agreed that we need to be kind to everyone so that others can be kind to us as well. Discussions that focused on people and animals the children cared about or needed to look after led to the spontaneous activity of supporting them to produce drawings to represent them. As they drew, the children told the practitioners stories about their drawings, and demonstrated their understandings of the images they produced. The opportunity to express their ideas through drawing had helped them to show concern for themselves or others (McArdle

& Spina, 2007). Some examples of children's drawings showing who or what they cared about with their comments are presented in Photographs 9.5.2a-c.

Photograph 9.5.2a: A's 'nanna' [grandmother].



Photograph 9.5.2b: G's mummy, daddy and her

Photograph 9.5.2c: J's crocodile

Using the first Principle of Life of the Little Earth Charter enabled us to reinforce respect for others, and between humans and nature as within the setting. This is important for sustainability and this helped to raise children's awareness that every living thing has its own purpose and that they interrelate with one another in the physical environment, and so deserve respect (Young & Moore, 2010).

The principle of peace and equity that ensures that people live harmoniously together especially when their basic needs are met and satisfied in fair and equitable ways, was demonstrated as practitioners supported children to develop basic social skills like sharing, being kind, helpful and empathetic towards others and animals. These actions also support sustainable living as children were supported to maintain positive relationships with others in a social setting and demonstrated how children learnt and developed within a social context in line with Vygotsky's (1978) socio-cultural theory. All these mentioned actions align with SDG 16 that fosters the promotion of a peaceful environment.

9.6 Caring for the environment: Children's knowledge / learning to care for the environment

In this section, I discuss the final aspect of care that focussed on children's knowledge/learning to care for the environment. This aspect of care will be discussed in the context of how children were supported in learning about food waste recycling and how they began to display behaviours of environmental stewardship.

9.6.1 Children's knowledge/learning about food waste recycling

This activity was planned based on my observations that children always emptied their leftover foods in the rubbish bins, and I had noticed an absence of food waste recycling bins in the setting. I shared my observations with one of the practitioners and asked why the setting had been slow in taking up the idea of food waste recycling. She informed me that the practice of food waste recycling was previously introduced to the children in the setting but was unsuccessful. As the Children's Centre where the nursery is situated was not part of food waste recycling scheme in the borough, I discussed with the manager the need to continue with this practice with children in the setting. She assured me that she would enter the nursery setting into an upcoming food waste recycling scheme which is expected to take place in the coming months.

After careful planning, the idea of food waste recycling was re-introduced to the children using the Basildon Council (2010) video on food waste recycling (see https://www.youtube.com/watch?v=-fVww0Awuo4). The 5-minute long video focused attention on how food waste from kitchens can be collected, by introducing the food caddy that can be lined with a compostable bag, old newspaper or with nothing at all, and examples of foods that can be collected in the food caddy including bread, bones, meat, fruit and vegetables, eggshells and other food leftovers. The video continued with the next steps after collection in the food caddy which is the green wheeled garden waste bin. After the food waste is poured into the green waste bin, the video ends with the collection of the bin by the Council and taken away.

As the setting did not have a food caddy, we agreed for mine to be brought in as it was the exact type of food caddy used in the video, whilst practitioners gathered old newspapers for lining it. Children asked questions about the meaning of 'recycling'

and they were helped to understand that it means *"using things again and again"* so that we can help the environment.

The activity started with discussions on what the children did with their leftover food at home. A few answered: *"make compost"*, while some said: *"we put it in the rubbish bin"*. The children watched the video and recognised some familiar objects in the video such as rubbish bins and the various types of food. They were also shown the food caddy and I modelled how it should be used for leftover food collection in the nursery. There were discussions about what happens to the food waste which then focused on how food waste is used to make compost and how it helps to make things grow. This was linked to their gardening experiences in the nursery and how compost is used to help the plants and flowers grow.

The food waste caddy was purposefully left at a corner close to the rubbish bin in the playroom. The team observed during lunchtime that the children had begun to engage with the experience of food waste recycling shared in the video session. We observed that whenever a few children, out of habit, began moving towards the rubbish bins, other children would shout out: *"No, no ... not there ... here!"* and *"You're to put it in the new bin!"* and point into the newly installed food caddy to show them where the food waste should go. The children enjoyed the feeling of pouring left-over foods in the caddy and sometimes had to wait in a queue to carry out this action.

The children enjoyed putting their leftover foods in the food waste caddy. Their focus on taking part in this new venture extended over the duration of the study (see Photographs 9.6.1a & 9.6.1b on the next page). Despite the long queues that usually formed as many children wanted to use the food caddy, this did not deter them from carrying out their responsibility of using it for their leftover foods. It was interesting to see them waiting in queues just to use the food waste caddy.

The food waste recycling activity was purposefully framed and highlighted the role of the team's planning before implementing with the children. The success of the activity was also linked to participants' interactions during the activity that enabled them to build a continuous depth of knowledge and understandings of the concept through discussions (Edwards & Cutter-Mackenzie, 2013). Children's understandings of re-using food waste from responses like: "*make compost"* demonstrated their funds of knowledge (Moll, et al., 1992) and these were built on over the remaining months of

the study through conscious efforts aimed at focusing their attention on using the food waste caddy during meal times.

Photograph 9.6.1a

Photograph 9.6.1b

Photographs 9.6.1a & 9.6.1b: Children using the food waste caddy

9.6.2 Children as environmental stewards

Some attitudes of environmental stewardship arising from children's interactions with the outdoor began to emerge. At the initial stages of this study, many children were observed to be out of tune with nature as they usually pulled flowers from their stalks or showed dislike for some insects when out in the garden. Sometimes they stepped on the growing areas or dug out bulbs that had been planted even as we watered the flowers. As the months went by, their attitudes began to change as they stopped pulling out flowers or digging out bulbs. In addition, some children developed concerns for the growing areas that they took it upon themselves to either tell off their peers whenever they stepped on the patches by shouting: "*No, don't do that ... there's seeds inside the ground"*; or they would report their peers' negative actions on plants and flowers to the adults (UNESCO, 2010a).

One child (male) extended this attitude of stewardship to get support for a bee that he thought had got tangled in the flowers. He ran off to get a member of staff who helped to set the bee free. The child reported to me afterwards on the bee's condition before he went to get help for it: "*It was stuck in the leaves … it got stuck and could not fly out again …* (very excited and panting) *… It was stuck … and it was stuck on its back and it was upside down … It was stuck through the back …"* When I praised him for his act of kindness towards the bee, he was quick to point out that: "*L* (practitioner) *saved its life … But L did it."* Afterwards, during our quality time in the garden and we saw a few more bees, I shared with the children the information that when bees want to get nectar from flowers, they usually turned upside down to get inside the petals. The next time we were in the garden, the children and I watched a few bees as they did just that. Seeing this wonder of nature enabled the child (and others) to understand that the bee he saw was not in trouble as he had thought.

Children also began to extend caring attitudes to protecting other living things such as animals and birds. They helped to care for the nursery pet rabbit by feeding him pieces of leftover snacks and fruit or taking him for walks on a leash in the garden. Their awareness of the bird's nest (reported in Chapter Eight) also led to their interest in making water available in two little bird baths in the garden, showing their development of an empathetic view of nature (Fisher-Maltese, 2016). On some occasions as we watered the flowers, some children poured water in the bird baths (see Photograph 9.6.2a). On questioning them on why they did that, they would explain that the water was for the birds so that *"… they will not be thirsty"*.

Photograph 9.6.2a: The bird baths in the garden

Initially, many of the children were usually not willing to be involved in putting away watering cans after gardening sessions or tidy away toys in the playground after play. They would not listen to me and instead ran indoors when asked to tidy up. However, as their participation in the study deepened, they began to show willingness to help in this regard. They began to take pride in picking up watering cans from the garden after the sessions and taking them to their designated place even when other children ran off. They made efforts to be helpful, even without being asked, and we encouraged their positive behaviours with lots of praises. This new attitude extended to the way they helped with sweeping away sand from the rubberised floor of the playground after play. On this occasion, the team had removed a rug that had been placed near the sand tray. On seeing that there was a lot of sand underneath the rug, one of the children (female) immediately turned to her two playmates (both female) playing near the rug: *"We're going to clean this up."* Without any arguments, they all went indoors and came back with brushes and a dust pan and started brushing the sand off the floor (see Photographs 9.6.2b & 9.6.2c below). They did not stop until the floor was clear of sand. We praised the children for their behaviour, and they seemed happy.

Photograph 9.6.2b

Photograph 9.6.2c

Photographs 9.6.2b & 9.6.2c: Children sweeping sand off the floor

The children's actions in this instance could be just one of those circumstances when they unquestioningly accepted ideas from their peers. It is not clear if the other two children would join the same child to carry out a similar task in the future. I can only mention that this was a positive action that showed their commitments to caring for their environment. Since then, most of the children helped to clean up or sweep dirt from the playground.

Supporting children's learning about food waste recycling relates to the economic dimension of sustainable development that provides a continuing means of livelihood for people. When children are enabled to reflect on what happens to leftover foods, this will help to reduce the amount of food ending up in landfills that have the potential to emit potent gas e.g. methane. Educating children about the beneficial uses of leftover foods e.g. for compost and fertilising the soil; the potential to reduce pollution; and increasing quality of life for all; supports learning for sustainable development that implicitly aligns with SDG 3 on good health and well-being for children; and SDG 12 on responsible consumption and production. These developments support the principle of appropriate development as children will be able to develop to the fullest potential in all areas of their learning.

Children's actions as environmental stewards highlight the natural (environmental) dimension of sustainable development as their interactions in the outdoors have enabled them to act for their environment in various ways (Chan, Choy & Lee, 2009; Blair, 2009). Their positive actions that developed from their participation in this project showed their developing understanding of the importance of protecting biodiversity and developing understandings of their contributions to the ecosystem. These actions link with Sustainable Development Goal 15 on life on land, and also support the principle of conservation as their actions have the potential to ensure that the natural environment can and will continue to provide life support systems for living organisms. The respect they showed towards other people, plants, animals and other non-human organisms became central to their interactions and is important for the political dimension of sustainable development. Children's actions also suggest their developing awareness that they are *a part* of nature and not *apart* from it (Louv, 2008).

9.7 Activities provided for children and their links to the EYFS

Similar to the review of activities in Chapter Eight, activities discussed in this chapter also evidence some key principles of ESD that provide strong structures for their incorporation into the EYFS (Gilbert, Rose & Luff, 2015; Siraj-Blatchford, 2016; Boyd et al, 2018). I hereby present these activities and their connections to the EYFS in the table below:

ACTIVITY/EVENT	**EYFS – AREAS OF LEARNING AND DEVELOPMENT**	**RESOURCES**
Children's morality: Making moral choices about life on land; justification for kindness to insects and other living organisms	**C & L:** Listen attentively in a range of situations; respond to what they hear with relevant comments, questions and actions on 'how' and 'why' about their experiences and in response to events and awareness of listeners' needs. **UW:** Children make observations of animals and plants and explain why some things occur and talk about changes. **PSE** – Confidence in speaking in a familiar group, talk about their ideas; talk about their own and others' behaviour, and its consequences, and know that some behaviour is unacceptable	Live worm Water Book – Bees Like Flowers Snail Practitioners and researcher Indoor/outdoor environment
Literary explorations – fostering friendships; raising awareness of other cultures	**C & L:** Listening attentively to stories, accurately anticipating key events and respond to what they hear with relevant comments, questions or actions; follow instructions and express themselves effectively. **PSE:** Confidence in trying new activities and speaking in a familiar group; play co-operatively and form positive relationships with adults and other children **UW:** Know about similarities and differences in relation to places and how environments might vary from one another.	Books: Will You Be My Friend? Beatrice's Goat. Practitioners and researcher. Carpet area.
Children as active participants: Finding Reggie; planting sunflower seeds	**C & L:** Listening attentively and following instructions in a range of situations. **PD:** Show good control and co-ordination in large and small movements as they hold tiny seeds to plant in holes made in flowerpots. **PSE:** Confidence in trying new activities and speak in a familiar group. will talk about their ideas **UW**: Observing animals and plants to explain why some things occur and talk about changes.	Newspaper flowerpots Seeds Compost Indoor/outdoor environment Practitioners & children

Caring for self: Promotion of self-care	**PD:** Talk about ways to keep healthy and safe; manage their own basic hygiene and personal needs successfully, including dressing and going to the toilet independently	Handwashing posters Creative materials Indoor/outdoor environment Practitioners and children
Caring for others	**PSE:** Confidence in speaking in a familiar group, will talk about their ideas; talk about their own and others' behaviour, and its consequences, and know that some behaviour is unacceptable; play co-operatively with others; show sensitivity to others' needs and feelings; form positive relationships with adults and other children.	Video: Little Earth Charter Creative materials Indoor/outdoor environment Practitioners and children
Caring for the environment	**PD:** Show good control and co-ordination in large and small movements as they handle equipment and tools effectively including brush and dustpans.	Video: Basildon Food Waste Recycling; Food waste caddy Old newspapers Indoor/outdoor environment Practitioners and children

Table 9.7: Activities and their links to the EYFS

I began the process of making the necessary links of these activities with the EYFS by collating them and compared them with practitioners' pedagogical planning records that they shared with me. Doing this enabled me to capitalise on their funds of knowledge and practice about the curriculum as I followed the trend of their pedagogical planning. The connections to the EYFS were necessary as they provided answers to the research question to show how teaching and learning activities can be shaped to promote better knowledge and practice of ESD in within the existing curriculum framework and practices in an early years setting.

9.8 Summary

In this chapter, I have shown how care is an important 'ingredient' for sustainable development that enhanced participants' ability to connect with one another and to their environment. They were also able to co-construct knowledge and understanding of sustainability that was fostered by interactions in a socio-cultural context (Vygotsky, 1978; Noddings, 1984/1988/2013)

The ethics of care became prominent in fostering positive relationships amongst participants as they gained connectivity to one another through caring for themselves, others and their environment. This draws upon practitioners' professional funds of knowledge of natural caring, that is elevated when learning for sustainability (Ward, 2014; Luff, Miles & Wangui, 2015). Hence, learning for ESD in ECEC has potential to recognise and elevate the caring that is already prevalent in addition to caring about flora, fauna and places, in early childhood education settings.

The incidental finding of children's need for acts of love and intimacy arising from practitioners' caring actions in their work with children as they learned about sustainability highlights love and intimacy as crucial for fostering responsive relationships in ECEC settings. There is need for more focus on this issue in ECEC with regard to teaching and learning for sustainability.

I also showed how the theoretical perspectives supported data collection and analysis. Democratic and collaborative planning and co-designing of activities with practitioners supported their growth in confidence as they engaged with the concept of sustainable development in their practice. This led to the successful implementation of these activities. Most importantly, my description and analysis of events highlighted how the activities were either initiated by myself, practitioners or the children and how children engaged with these activities.

Quality time, active listening and dialogue amongst participants helped to support their learning for sustainability through sharing their funds of knowledge with one another in curricular interactions (Sylva et al., 2004a, 2004b; Haas & Ashman, 2014). Finally, activities developed for children demonstrated the holistic integration of the four dimensions of sustainable development in the teaching and learning for ESD in the setting.

Chapter Ten: Discussion, evaluation and conclusion

I started this research to gain insights into how children's and practitioners' knowledge, values, attitudes, skills and practices of sustainability can be understood and promoted within an early years setting in England, and this was achieved by focusing on one main research question:

- How can teaching and learning activities be shaped to promote better knowledge and practice of ESD within an early years setting?

Gaining answers to the research question was important in the context of early childhood education and care in England, as the EYFS is silent on 'sustainability', especially in the face of catalytic evidence from research and growing global awareness that emphasise its importance (Pramling Samuelsson & Kaga, 2008; Davis, 2009; Siraj-Blatchford, Smith and Pramling Samuelsson, 2010; McMichael, 2013; World Health Organisation, 2017; Wals, 2017). In the initial chapters of this thesis, my contention that early childhood development is the foundation for sustainable development was based on the awareness that strengthening the sector in the field of sustainability is key to achieving at least seven of the SDGs (see Chapters One and Two; Britto, 2015). This development recognises children as agents of change who have the potential to create a better world when they are supported to do so (Young Lives, 2016). The contextual information for the study in Chapter Two, with focus on current early years provision in England, showed the need for a re-orientation of its early childhood content and pedagogy in the direction of ESD to enable it to be embedded in ECEC curriculum and practice.

My summary of reviews of research on ESD highlighted challenges to be met and gaps to be filled that laid a foundation for my study, such as the need for practitioners to be knowledgeable about relevant sustainability questions and issues to explore with children; and how to present these issues to children in meaningful ways within an existing curriculum. My attempt to provide answers to these issues led to a critical review of literature (see Chapter Three) that was organised according to 11 key themes that drew attention to approaches that were useful for addressing sustainability issues in ECEC settings. Insights from these studies were instrumental in my adoption of appropriate theoretical perspectives as I was able to identify how they helped in

framing the study of ESD. Ideas gained from these perspectives influenced my choice of research methodology and design, research setting and participants, methods of data collection as well as the approach taken to data analysis (see Chapters Four to Six).

I presented and analysed findings from collaborative working with practitioners and children in Chapters Seven, Eight and Nine. I showed in these chapters how collaborative working, especially in the planning for and implementation of activities with sustainability focus, can promote sustainable development in ECEC. In addition, new ways of working with practitioners and children on issues of sustainability were revealed in these chapters, with evidence for how practitioners' confidence and knowledge of sustainability developed in leaps and bounds as we worked together.

This final chapter is an opportunity for me to evaluate findings from the research whilst considering their policy and practice implications for the early years sector. I also discuss the contributions of my study to ECEC, reflect on the research process by summarising challenges, and its strengths and limitations as I draw upon my learning from the entire research process.

10.1 Regrouping themes of three-phase AR into new themes

After a final critical study of themes from all phases of the action research discussed in Chapters Seven, Eight and Nine, I regrouped them into new themes using thematic analysis based on their similarities and links as some of them either re-occurred throughout all the three phases, exhibited similarities or other links. (Braun & Clarke, 2006). I did this after careful consideration of all the activities reported in my study that were either planned by the team (practitioners and myself) or those that arose spontaneously from children's interactions with each other, with the team, and with their environment.

This final cross-phase analysis of findings led to the identification of the overall key themes from the research, and this is shown in the diagram on the next page:

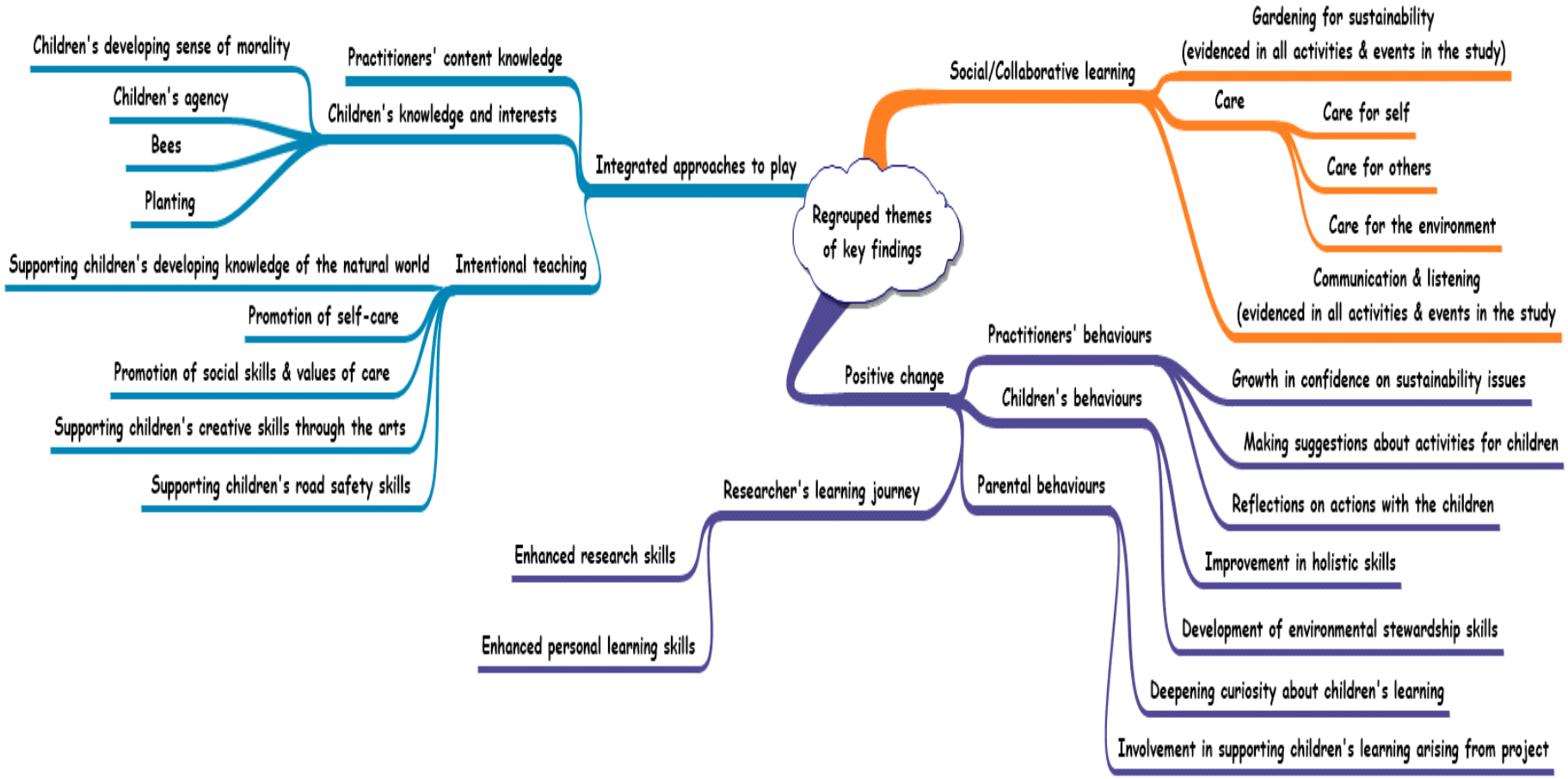


Diagram 10.1: Regrouped themes of key findings

Diagram 10.1 shows how the similarities in the themes as discussed in Chapters Seven, Eight and Nine, highlighted three focal points under which participants' actions, events and activities can be understood. In addition, I was able to form my own views regarding participants' actions, events and activities (such as positive change relating to practitioners' and parental behaviours in addition to my personal growth and behaviours).

The three themes and their associated sub-themes are listed below:

1. **Integrated approaches to play** that incorporates practitioners' existing content knowledge, children's knowledge and interests as well as intentional teaching;

2. **Social/collaborative learning** that occurred through gardening for sustainability, care, communication and listening.

3. **Positive change,** that took account of practitioners', children's, and parental behaviours in addition to researcher's personal learning during the research process.

Each of these themes and associated sub-themes, where relevant, will be discussed in detail to show how they have been useful in providing answers the research question about how teaching and learning activities can be shaped to promote better knowledge and practice of education for sustainable development in an early years setting.

10.2 Integrated approaches to play

Planning for teaching and learning for sustainability requires integrated approaches that foster dynamic interactions between practitioners, children and myself as a researcher. Our pedagogical planning for children's learning for sustainability through play was informed by their interests, choices capabilities and knowledge, from an 'inside-out' approach that considered children's understandings of the inherent qualities and characteristics of play (Wood, 2010, 2013). We thought about what play meant to children whilst taking into consideration their (and our) cultural or home practices as well as the meanings and purposes ascribed to them. My appreciation of practitioners' funds of knowledge and understandings of sustainability that I capitalised upon enabled us to intentionally co-plan for children's learning for sustainability.

We considered and reflected on the complexities of our roles as adults, as we thought about the best possible ways to present issues of sustainability to children through play. Adult- and child-initiated activities were integrated through intentional curriculum planning, assessment and feedback during staff meetings or regular individual feedback from practitioners. Integrated approaches to play that focus on relationships between practitioners' and children's existing knowledge and interests and intentional teaching for sustainability will be discussed in the following sub-sections.

10.2.1 Practitioners' existing content knowledge

This study has demonstrated that to plan and implement teaching and learning activities for sustainability in early childhood care and education effectively, it is important to acknowledge and value practitioners' existing knowledge of sustainability issues (Sund, 2008; Sund & Wickman, 2008; Pramling-Samuelsson & Asplund Carlsson, 2008; Kennelly et al., 2008). I started this project with an exploration of practitioners' existing content knowledge and understandings of ESD through one-to-one semi-structured interviews. This was with the aim of finding a starting point from which our existing funds of knowledge in relation to ESD could be capitalised upon and used as bases for the project. On my discovery that their appreciation of sustainability was limited, as evident from the variable levels of knowledge displayed in their responses, I worked collaboratively with practitioners, sharing knowledge and capitalising on their experiences to develop our knowledge base of sustainability.

I experienced a growth in my personal learning of issues of sustainability as the team looked for new ways of presenting complex issues of sustainability to the children. This enabled us to arrive at shared understandings of ESD that were used as starting points for pedagogical planning and implementation of activities in practice, whilst reflecting on their effectiveness. In short, our understanding of ESD enabled us to collaboratively make responsible and respectful decisions about the various activities in ways that were stimulating and engaging for the children (such as in the use of interactive videos and books).

10.2.2 Children's knowledge and interests

Children in the study displayed knowledge and skills about the environment that demonstrated their understandings of the Earth and environmental issues in relation to sustainability (Engdahl & Rabušicová, 2011; Mackey, 2012; Ärlemalm-Hagsér, 2013a). This enabled us to build on their knowledge and understandings of issues to expand on their values, knowledge and skills. Comments from their discussions of actions that were classed as unfair and inappropriate to others, showed how children learn behaviours from interactions with others in a social context. They were able to identify humanity's inappropriate actions especially in relation to other non-human species (e.g. bees, worms and snails), when one of them commented that bees sting *"because we're not nice to them*", thus demonstrating their knowledge of cause and effect. In this research, the team honoured children's voices by listening to them and acting on their needs.

The study also demonstrated how children's interests were used as pedagogical bases for their learning on sustainability issues. Their interests in planting and bees created opportunities for growing a wildlife garden to attract bees. Their main choice was sunflowers as evidenced from their comments such as: "*I want to grow flowers*" and "*I want to grow sunflowers. Bumble bees like sunflowers*", and this led to my buying various wildflower seeds including butterfly and bee flower seed mixture; mixed bright and cool flowers for wildlife; calendula pot marigold nova; cornflower polka dot; dahlia mignon mixed; and foxglove foxy mixed. We gave children opportunities to plant seeds of their choice from these varieties.

Hence, their current understandings and interests were used as starting points for our planning and implementation of practical activities on sustainability through discussions that enabled us to present these activities to them in ways that were meaningful and accessible such as through reading books, planting, drawings and videos. These activities supported children's learning about sustainability concepts as they helped to bridge the gap between what most of them already knew and what they could learn with the help of more knowledgeable others, otherwise known as the 'zone of proximal development' (Vygotsky, 1978). This support was effective as the team supported children to work at a level that was beyond, but not too far ahead, of their current level of competence (Tarr, 2008; Prince, 2010; Hedges, Cullen & Jordan, 2011; Ward, 2014; and Edwards et al., 2016).

Children's interests were recognised and capitalised on by the team when planning and implementing activities on sustainability in the setting. This supported children to make meanings of their experiences, especially in an environment with space and freedom to move about as they worked and played (Brook, 2010; Wilson, 2012); where they were able to ponder over issues and asked questions; where they explored and expressed their understandings of issues; and where they challenged and arrived at shared understandings (Sylva, et al., 2004a, 2004b; Siraj-Blatchford, 2009; Ralston, 2011).

10.2.3 Intentional teaching

Closely linked to children's knowledge and interest and practitioners' existing knowledge base with regards to children's learning for sustainability, is the role and attitudes of educators. This is because they have the capacity to draw children's attention to aspects of sustainability by engaging them in activities that will enhance their understanding of themes and topics of sustainability (Nikiforidou, Miles & Luff, 2015; Luff, Miles & Wangui, 2015). Practitioners used their professional judgements to intentionally identify, plan for and implement children's play activities and environments, such that would interact with children's existing capabilities to create long-lasting and worthwhile experiences for them. This development is consistent with Vygotsky's (1978) socio-cultural theoretical viewpoint which holds that adults may sometimes need to direct children's attention to significant features of a task, as children may bypass intended content knowledge of such tasks in their freely-chosen play experiences (e.g. Hedges & Cullen, 2005; Langford, 2010; Nutbrown, 2018), and this holds true for sustainability learning in this study.

This study has shown that children's engagement with topics and themes that focused on sustainability, became effective through intentional teaching that was facilitated and enhanced through collaborative planning and implementation of activities with the children (Edwards & Cutter-Mackenzie, 2013). At the initial stage of the project, practitioners agreed to the growing of a wildflower garden that would attract bees when one of them suggested: *"It would be good to plant wildflower seeds …"*; *"If we could plant wildflower seeds as these attract bees and wildlife … and we can talk to them about that … well … then we can go forward with talking about the bees, what*

they do … how they affect the environment … how they pollinate … "And how we need to look after them because they help us in the pollination of flowers …" Implementing activities with these goals in mind became the driving force in our planning for children's learning in various ways.

Planning and implementation of the activities with sustainability focus also became effective through teaching strategies such as sessions from real life, such as interactions arising from gardening and the outdoors and other social interactions; reading books, creative arts and videos. These strategies fostered participants' active engagement such as dialogue and questionings, that were characteristic of the 'pedagogy of listening' (Rinaldi, 2006), one of the methods of data collection used for the study. The dialogic interactions between children and the team contributed to learning about sustainability. This was achieved through encouraging children to ask questions as they enlisted the help of adults as they shared information. Hence, the 'pedagogy of listening' (Rinaldi, 2006) was crucial in supporting children's learning for sustainability in this study.

10.3 Social/collaborative learning

Findings from the study also highlighted social learning as an important pathway when planning and implementing activities with sustainable development as a focus (UNESCO, 2002). For the practitioners, working collaboratively as a team is one of their practice requirements. But when their collaborative working relates to sustainability, this demands a deeper level of relationship that is more than the one characteristic of their practice – one that includes a need for total commitment to the values and goals of sustainability. This study has demonstrated that learning for sustainable development cannot thrive in isolation but in a community where individuals and others mingle, looking out for the good of one another whilst working towards creating or fostering harmonious existence among them. This means that to achieve the aims of sustainability in early childhood education and care, social interactions that serve as appropriate reference points for sustainability behaviours need to be fostered among practitioners, children and other adults in settings.

Social/collaborative learning enabled the team and the children to co-construct knowledge of sustainability as we interacted with one another in a social setting (the

nursery) consistent with Vygotsky's socio-cultural theory. Working collaboratively with the practitioners enabled our understandings of sustainability to increase as each phase of the action research provided opportunities for us to make suggestions regarding actions to take with the children, plan towards those actions, and implement them whilst observing. We constantly reflected on why and whether actions taken individually or collectively regarding activities with the children had any impact on practice, and how they might be improved against the critical feedback of others. Most importantly, we focused on our values such as equality, fairness, and allowed children to lead the way. These values were highlighted from the face-to-face interviews with the practitioners and demonstrated in our interactions such as how we acted in the directions of those values, as well as how we achieved what we deemed to be important (McNiff & Whitehead, 2011; McNiff, 2017).

The action research design of this study engaged us in problem-solving through a cyclical process of thinking, acting, data gathering and reflection, and enabled us to investigate and evaluate our practice as well as reaching mutual understandings of the purpose of the research (Savin-Baden & Howell Major, 2013; Creswell, 2014; McNiff, 2017). Participants gained knowledge, skills, values and attitudes that are necessary for sustainability from each other as they interacted with each other and their environment. This echoes Vygotsky's socio-cultural theory, that emphasises social interaction as central to an individual's developmental process in addition to the importance of everyday activities and content in providing meaning for children's development of concepts learned in schools. Evidence from the study has shown how participants' everyday activities and content have provided meaning for their learning for sustainability.

Based on these arguments, social or collaborative learning need be at the heart of practitioners' planning and implementing of practical activities with sustainability focus for children in early years settings. When practitioners and children work together, teaching and learning effectively for sustainability becomes more effective when they are engaged in activities that provide opportunities for them to share knowledge and ideas in a caring social environment. In addition, collaborative working between myself and research participants enabled us to gain deeper understandings of sustainability issues which were used as bases for planning and implementing activities on sustainability for the children. This highlights the view that upholds

sustainable development as a vision that requires active and knowledgeable citizens capable of making the right choices about complex and interrelated natural/environmental, social, economic and political issues they are faced with (UNESCO, 2002).

10.3.1 Gardening for sustainability

Gardening arose from the aspect of social/collaborative learning for sustainability. Children's participation in the wildlife gardening project showed how gardening helped to improve the complexity of their experiences. Gardening became a source of meaning-making for the children and adults in the nursery setting as it enabled them to gain repetitive access, meaning and associations which are needed to create a bond with a place (Blair, 2009; Wilson, 2012). They experienced cycles of seasonal change such as learning that plants grow from seeds after a certain number of days; their experiencing how plants and flowers wither off and die at the end of their season, usually towards the end of autumn; and how we had to suspend the activities on bees due to their going into hibernation at the end of summer. Learning about these changes offered the children better grounding in understandings and experiences of these phenomena.

Gardening also helped to foster children's connection with nature as they became more intimate with plants and other living creatures they encountered in the garden (Wilson, 2012; McClain & Vandermaas-Peeler, 2016). Their experiences with nature became more enriched as their play in the garden had previously been structured, regulated and carefully monitored. In addition, before the commencement of this project, the garden had been stark and bland as the patches used for the wildlife gardening had been left disused for over two years. This made the garden lack what Blair (2009) refers to as "the appeal of intimate spaces grounded in the natural environment" (p17).

The wildlife gardening project enabled explorations in nature that fostered participants' health and emotional bonding with the natural world (Wilson, 2012; Haas & Ashman, 2014). It also contributed to children's development in all areas of learning in this study such as in stirring their senses as they experienced flowers and other living creatures; they smelt flowers and listened to the sounds of bees and birds as they perched on flowers and trees (Starbuck et al., 2014). As they worked in the garden, the

children practised both fine and gross motor skills when picking up seeds or bulbs or dug holes for planting.

Children's social interactions also developed through gardening in the natural environment (Ritchie et al., 2010; Haas & Ashman, 2014). They played more with each other, laughed and enjoyed themselves, as they developed social skills like patience in taking turns and in exploring detailed changes of plants that occur from day to day; compromising; sharing items; as they worked with others in the garden. They listened to and were equally listened to, as they shared experiences with peers and adults. Finally, the children's confidence developed as they conquered fears of creatures by holding them in their hands for closer examination before returning them to their habitats (Starbuck et al., 2014).

Children's deep engagement with the garden which in turn fostered improved interactions with each other and their environment, led to the creation of a harmonious environment. Gardening enabled the children to feel connected to the natural world as they were able to experience changes in practical terms. In return, they learnt to have respect for their environment and for others. I observed a sense of peace in them created through harmony within themselves, with others and with their environment (Chan, Choy and Lee, 2009; Ritchie, et al., 2010). The environment became calmer as the children played together and there were more children playing in groups rather than solitary as observed at the commencement of the project.

In addition to the benefits of gardening in supporting children's development, the gardening project was powerful in bringing families together as it benefitted not only children but everyone who participated (Starbuck & Olthof, 2008). In the study, parents got involved in the gardening project due to their children's interests and supported their children's learning in appropriate ways.

Just as the nursery gardening promoted physical growth, it also offered children educative growth as it guided their natural impulses to interact with nature into productive channels such as tending and caring for their environment and all living things (Brook, 2010). They were able to explore, create meanings, develop skills, attitudes and understandings which were driven by their own interests and experiences (Pramling Samuelsson & Asplund Caarlsson, 2008; Davis, 2014, 2015) through events

arising from the gardening project that enhanced opportunities for communication, participation and interaction (Luff, 2018b).

10.3.2 Care

Before teaching and learning for sustainability can be effective, there must be in place caring relationships amongst participants. Evidence from reviewed studies (e.g. Chan, Choy & Lee, 2009; Gambino, Davis & Rowntree, 2009; Norðdahla & Jóhannesson, 2014) showed that teaching and learning for ESD thrives on relationships, and this notion is consistent with the relational dimension of ethics of care perspective adopted in this study (see Chapter Four). Ethics of care perspective is evident in participants' ability to foster positive relationships brought about by interactions among them, and where they were able to co-create knowledge and understanding of issues of focus. This necessitated the need for participants to listen and being listened to (Rinaldi, 2006).

The children and practitioners in the study showed and demonstrated interest in caring, not only for themselves, but for others and the environment. This behaviour was observed to be motivated by love or inclination (Noddings, 1984/2013). Care is a vital ingredient for teaching and learning for sustainability as it enabled participants to have deep concerns for issues they acted upon in the study. Care as observed in participants' attitudes in the study was relational, based on reciprocal and trusting relationships as they considered their relation to animals and plant life that responded in their own distinctive ways to the care from human participants.

On the part of the children, findings highlighted that working together, especially in the garden, created opportunities for establishing friendly and caring relationships with other children and the adults. Children who were usually wary of others became friendlier and took part in activities that they always looked forward to, especially the gardening sessions. They asked questions and were always eager to offer assistance to others who needed help. They also developed skills of sharing, looking after themselves, others and their environment as discussed in the previous chapter.

Practitioners modelled caring to the children in the nursery by encouraging them to have practice in caring by treating them with respect and consideration and encouraging them to treat each other in similar fashion. The children developed into

moral persons from their holistic development through quality education provided by the team in the setting who supported them to understand themselves and others as well as their links to the wider natural and social environments (Yan & Fengfeng, 2008). This was attributable to the provision of a harmonious environment which fostered all participants' inner and outer harmony, through conscious planning and implementation of practical activities that support sustainability. The practitioners were also able to support the children in developing respect for themselves, others and for their immediate environment (Chan, Choy & Lee, 2009).

As evidenced from my presentation and analysis of findings in Chapter Nine, the incidental finding from the study on the issue of children's demand for acts of love and intimacy from practitioners in addition to those acts which have been described as arising from natural caring, shows how love and intimacy that arise from natural caring is important for sustainable development. Children's need for acts of love and intimacy was aptly captured by one of the children when he commented in one of my discussions in the previous chapter that: *"I only listen when they* [practitioners] *give me a hug."*

Even though this was a single incident of such bold declaration, I observed that children craved for such acts from the team. Most of the children usually asked to be carried by expressly stating: *"pick me up, please."* The children wanted to be touched and held by their carers. This suggests that within the early years setting, acts of love and intimacy are important for children's learning for sustainability. For a child to insist that he would only listen when practitioners gave him a hug, is a pointer to the need for love and intimacy to serve as the basis for sustainability learning in the early years.

10.3.3 Communication and listening

Communication (listening) is important for effective teaching and learning for sustainability in various ways (Rinaldi, 2006; Sylva et al., 2004a, 2004b). Firstly, the study design in the form of an action research project that alternated between enquiry and action, is a collaborative one that involved individuals who were focused on the co-creation of knowledge of sustainability practices with others (McNiff & Whitehead, 2011; Creswell, 2014). Communication provided opportunities for practitioners to reflect on how children learn for sustainability. Listening enabled them to reflect on

the appropriateness of the activities and resources provided for children's learning as well as how the activities engaged the children's attention (Wood, 2010, 2013). These reflections took place in collaborative contexts with me and other practitioners during staff meetings and as we worked together to enable us to check our practice initiatives against the constructive judgement of others (Munn-Giddings, 2017). Thus, in promoting education for sustainable development in an early years setting, reflections happen best when practitioners are working in an environment that allows them to think and be innovative, rather than working within the strict confines of a prescribed curriculum like the EYFS in England. The reflections, nevertheless, were not limited to practitioners alone, as the children, too, were observed to reflect on their learning. This was commented on by the setting's Deputy Manager at the last staff meeting, held with practitioners at the setting, when she said: "*It is so nice to see that the children are reflecting on their learning as well. We've had a number of children coming in excited telling us about the bees they have seen in their gardens at home. They even reminded us that bees are important for making honey*". In addition to this, children were observed on some occasions shaking their bodies and telling others around them that they are doing the *"bees dance to get honey"*.

On the children's part, opportunities that arose during the study fostered communication among all participants, and this contributed to effective teaching and learning for sustainability in the setting. Children asked and answered questions that were either raised by them, practitioners, myself or by the other children. Active listening became evident in the project when children were observed to initiate questions due to their curiosity or following an interest or passion in something, they turned to the adults, inviting them to share.

Findings presented in Chapters Eight and Nine showed that when children were given opportunities to listen and be listened to, they will be able to express their differences as well as be receptive to the differences of others in social contexts. Listening to the children as well as the children listening to each other demonstrated their awareness of their judgements/prejudices as well as their ability to suspend them and be open to change. In the process, we (the adults) realised the important task of our not only allowing those differences to be expressed by the child, but to help the child to negotiate and nurture those differences through exchange and comparisons of ideas, by asking children questions such as: "why?" "how?" and "what?" as these were the

key questions that children constantly asked, both in and out of educational settings. In this way, we supported children to move forward in their learning by responding appropriately through verbal means, offering physical help or resources, or in other ways as the situation called for it.

The team moved children forward in their learning through communication and consistent guidance during practical activities with them (see Nikiforidou, Miles & Luff, 2015). This highlighted practitioners' role and attitude in drawing children's attention to perspectives as Vygotsky's socio-cultural theory proposes. For instance, during some of the practical activities such as drawing people they care about or whilst creating posters on road safety, children either explained who the people represented by their drawings are or communicated their ideas to practitioners about what they did in their everyday lives as they worked on creating a road safety poster (McArdle & Spina, 2007). Shared conversations such as these enabled practitioners to understand children's needs and how to support them. This also means that quality time is an important factor for achieving the aims of sustainability, as the study has shown that the quality time spent together enabled participants to effectively communicate with each other by actively listening, rather than practitioners' working towards achieving particular curricular targets, in addition to supporting them to gain knowledge and understanding of sustainability issues in the setting (Kiewra & Veselack, 2016).

10.4 Positive change

Participation in the study resulted in positive incremental changes in participants' knowledge, values, attitudes, skills and practices of sustainability. This arose from social interactions among participants as they learned alongside one another as they worked in the garden and participated in activities within the setting. The study took place over a period of two years, and within this period, observations and findings revealed transformation in participants' behaviours which occurred from their participation in the study. These changes were observed to occur over time, thus lending credence to Davis & Gibson's (2006) view that change which emanates from participating in ESD projects is an evolutionary, rather than a revolutionary process.

In discussing the positive changes observed in all participants' knowledge, values, skills and practices of sustainability, I firstly focus on those observed in practitioners'

behaviours, followed by those observed in children's behaviours (which indirectly influenced parental behaviours). Finally, I focus on changes in my behaviours as an action researcher.

10.4.1 Practitioners' behaviours

Practitioners on their part gained better knowledge and understandings of the concept of sustainability as well as the ways it can be presented to children in meaningful and engaging ways. To demonstrate this development, I initiated two activities to explore their understandings of ESD during the final staff meeting held with them at the end of the action research. For the first activity, I requested each of them to draw an outline of their hands and inside each finger, to write one word to describe their understandings of the concept (Hill et al., 2014). This was the same question I asked them during the one-to-one interviews I had with them at the beginning of the research, but this time, it was with the aim of exploring whether their understandings of ESD have deepened significantly from their initial understandings. Ten (10) practitioners took part in this exercise and their responses are presented visually by the Wordle on the next page (see Diagram 10.4.1a).

To arrive at this visual image, I edited the words provided by the practitioners to enable me to make comparisons with those provided at the beginning of the action research. Similar to the ways practitioners expressed themselves at the beginning of the action research, it is evident from the table of practitioners' words at the end of the action research (see Appendix 12) that in some instances, they had expressed the same ideas in different forms e.g. 'recycling/recycle'; 'care/caring'; 'growing/growth'; 'education/educate'; I thought it necessary to edit them by taking note of the core words used by them and coming up with 'recycling'; 'care'; 'growing' and 'education'. Similarly, where participants mentioned 'caring for environment'; 'caring of environment', 'caring for plants', I also took note of the 'caring' and edited it to read as 'care'. This was the case for all other words as edited as shown in Appendix 12, and all other words that occurred once were made to remain as mentioned.

Diagram 10.4.1a: Practitioners' understanding of ESD at end of research

To produce the Wordle, I used the same font (Berylium) as that used for the initial words in Chapter Seven. I also used the same layout of words to have 'rounder edges' and 'half and half' (i.e. half of the words appearing horizontally and the other half appearing vertically); the same organic carrot colour; and the use of lower case for all the words to ensure consistency of characters.

This Wordle shows practitioners' knowledge of education for sustainable development as being more focused than at the initial stage of the study which I presented in Chapter Seven. For instance, 'care' is seen as the biggest word in terms of size, followed by both 'environment' and 'growing' as they appeared the same number of times in the

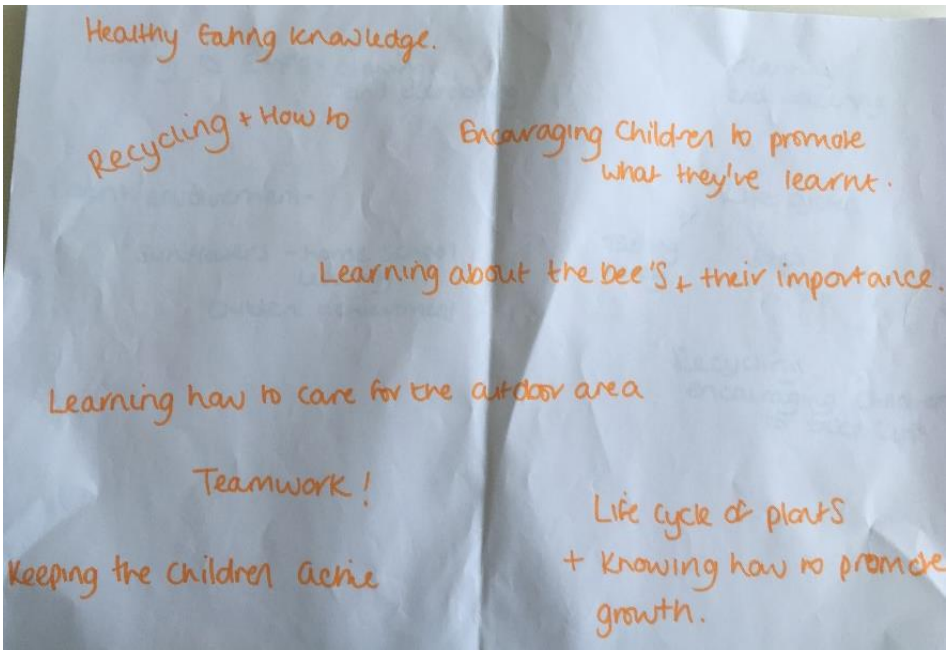
data. The word ‘recycling’ is next in terms of size; followed by ‘sharing’, ‘life’ and ‘team’ which appeared the same number of times in the data. Next in terms of size are words like ‘future’, ‘reflection’, ‘self-care’, ‘home-school-learning’ and ‘education’ which appeared in the data the same number of times. Finally, words which appeared just once e.g. ‘ecosystem’, ‘origin’, ‘respect’, amongst others, are all of the same size in the Wordle.

Even though words such as ‘environment’; ‘recycling’; ‘growing’; ‘planting’; ‘plants’ and ‘green-fingers’ show that much of practitioners’ knowledge still rests on the natural (environmental) dimension of sustainable development, there is evidence to suggest that they now have better understandings of the social dimension of sustainable development as shown in words like ‘care’ which is the biggest word in size in the Wordle; ‘team’; ‘self-care’; ‘sharing’; ‘kindness’; ‘reflection’; ‘observing’ and ‘home-school-learning’. In addition, words such as ‘’origin’; ‘future’; ‘education’ and ‘life’ can be argued to rest on the economic dimension of sustainable development; whilst ‘respect’; ‘important’ and ‘knowledge’ can be argued to rest on the political dimension of sustainable development.

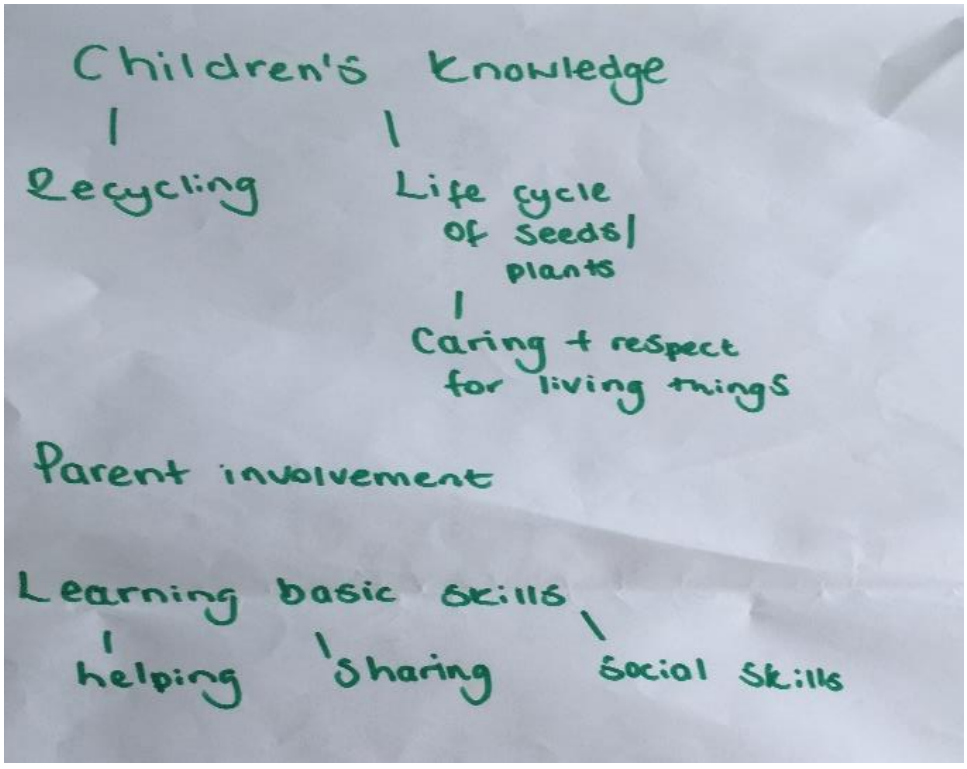
Practitioners’ words at the end of the research were more focused than at the beginning. My claim rests on the fact that the Wordle has shown their immediate learning based on how they have participated in the research. There were fewer words used in their responses, but they were content-based and showed their understandings from the point of view of how they had taken part in the research. When one considers how they worked as a team, shared their funds of knowledge with one another, observed the children and reflected on their practice, their actions align with the socio-cultural theory adopted for the research as they worked with others within a specific context and interacted with others especially in the nursery garden. In addition, their interactions with others in the specific context enabled them to show caring attitudes of sharing, being kind, mutual respect, the view of everyone as important, thereby highlighting the ethics of care.

For the second activity, I divided the practitioners into groups and gave each group a poster sheet on which they were asked to make a list of their personal learning during the research process. Examples of their personal learning are shown in their own words

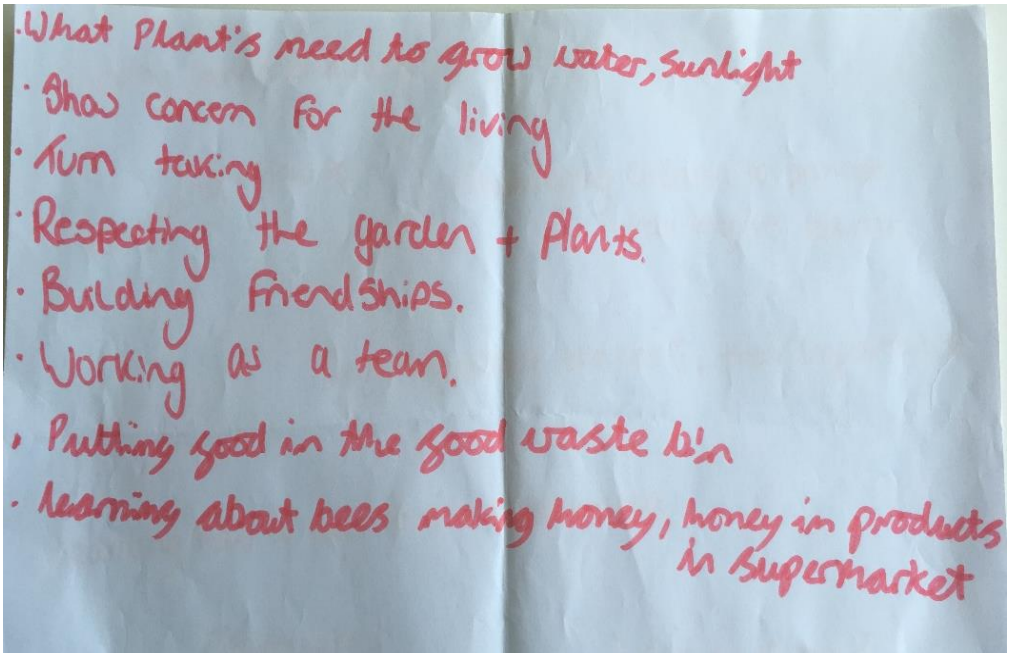
on the posters as shown in Photographs 10.4.1b and 10.4.1c below and 10.4.1d on the next page:



Photograph 10.4.1b



Photograph 10.4.1c



Photograph 10.4.1d

Photographs 10.4.1b-10.4.1d: Examples of practitioners' personal learning from the action research

From the listed words on these posters, it is evident that practitioners' personal learning grew in leaps and bounds during the research study (see Prince, 2010; Ogelman, 2012; McNaughton, 2012; Hine, 2013; Norðdahla & Jóhannesson, 2014; Ward, 2014; Luff, Miles & Wangui, 2015). They learnt about bees and their importance; how children's knowledge grew as they learnt about recycling and life cycle of seeds and plants; how to promote growth and putting leftover food in the food waste bin. In addition, the practitioners gained more knowledge about building friendships; working as a team; parental involvement; showing concern, caring and respecting living things and how children learn some basic skills such as sharing, turn-taking and other social skills (Ärlemalm-Hagsér & Sandberg, 2011; Ogelman, 2012).

10.4.2 Children's behaviours

Participation in this study influenced children's behaviours and attitudes in positive ways. They become happier as they established caring relationships among themselves

and towards their environment that is evidence of their development of inner and outer harmony (Chan, Choy & Lee, 2009). We observed that children who were usually withdrawn at the beginning of the project became more open to playing with others whilst in the garden (Haas & Ashman, 2014). There was a child (male) with mild autism who usually played alone. As the study progressed, his attitude to play changed whilst in the garden. He joined others as they watered and usually stayed by my side to hand me or other children gardening equipment.

Children gained knowledge about their environment from participating in planting and tending plants and flowers. They also became more knowledgeable on issues of sustainability as they interacted with one another and their environment (Chawla & Cushing, 2007; Haas & Ashman, 2014). They learnt new words such as 'compost', 'bulbs' and the contributions of non-human organisms to the ecosystem. They developed social skills such as sharing, helping and being kind to others; developed some moral values of caring, justifying positive actions towards smaller living organisms, and most importantly, respect for themselves, others and for their environment. All these values were observed to develop over time and confirmed in findings from the setting's Ofsted Report after an inspection carried out on 24th November 2017 (the last phase of the action research) that:

"*Staff are calm, patient role models and demonstrate respectful behaviour. Children follow their example as they show kindness, share resources and play harmoniously" (p.1).*

10.4.3 Parental behaviours

Children's participation in activities provided by the team (researcher and practitioners) also influenced parental behaviours as they got involved in their children's learning for sustainability, thereby fostering home-setting learning. At the commencement of the research, most of the parents were cautious about my presence in the setting as well as the purpose of my research. Over time, I managed to build cordial relationships with them, especially as their children became more familiar with me. This made it easier for the parents to question me about what their children were learning. It clarified information that their children passed on to them from the setting, and some even took part in some of the activities set out for the children. They also

provided feedback to me whenever they came into the setting or whenever I came across them anywhere else outside of the nursery setting.

In carrying out these activities with the children, parents were able to gain better knowledge of sustainability issues (Prince, 2010; Ogelman, 2012). As they supported their children in caring for their sunflower plants, they too, gained new information about planting. They also provided regular feedback to the nursery by sending photos of the growth processes of these plants via e-mails as reported in the previous chapter.

10.4.4 Researcher's personal learning journey

My personal learning during this research cannot be quantified as it has shaped my perceptions, attitudes and behaviours as an action researcher. Firstly, my skills of working with others as a team (such as the practitioners) were further enhanced during the study. It was important for me to cultivate positive attitudes such as respect for other people whose values, ideas, skills and understandings may be different to mine.

Secondly, my notions of some democratic values such as patience, listening to all participants and involving them in decision-making, were tested during the study. I have always believed that I am a patient person, but I can state that my endurance level rose from how it was before I started the research. These skills enabled me to develop strategies for working effectively with all participants to facilitate as well as bring about a successful conclusion to the research study.

Thirdly, my observational skills sharpened during the research process as they became essential to gathering data and enabled me to adapt the pace of my research study. For instance, working with the practitioners as they carried out their daily duties meant that there were times when their work priorities took over. This sometimes led to periods where my 'ethical radar' (Skånfors, 2009:1) unfolded to enable me perceive that practitioners' interest and energy waned, and which usually led me to push my research interests to the background to enable them to carry out their work priorities. I usually found such periods frustrating, but this was balanced by other periods of great activity that helped to move the research forward.

Fourthly, my adoption of the theoretical perspectives that guided this research have been illuminating in extending my knowledge on how ESD can be promoted in the early years. Vygotsky's socio-cultural theory enabled me to see how individuals

gained knowledge and understandings of their world through interactions with others in a given context. I was also able to appreciate that to gain this knowledge of sustainability, individuals needed to share their funds of knowledge for mutual enrichment. To achieve the aims of the research, my interactions with participants made it necessary for me to pay attention to practitioners' and children's funds of knowledge, and increased my own funds of knowledge, to develop both planned and spontaneous activities for the children. In addition, sharing knowledge with practitioner participants enabled our confidence to grow as our funds of knowledge increased, thus enabling us to experiment with new activities that have the potential benefit of promoting sustainability knowledge in the setting. On the children's part, sharing knowledge with them enabled the team to pay attention to their needs and interests as well as provide activities for them based on these interests (Bertram & Pascal, 2002; Siraj-Blatchford et al., 2002; Haas & Ashman, 2014; Luff, Miles & Wangui, 2015).

The last of these theoretical perspectives is the ethics of care that I considered to be most illuminating for the study because it has brought 'care', which is almost taken for granted in the early years, to the forefront of learning for sustainability in ECEC. Findings from this study have shown the importance of care in participants' learning for sustainability. They have cared for themselves, others and for their environment in learning for sustainability

Finally, from the outset, the reflective nature of the research enabled me to change the research title. At the beginning of this research study, the title was "Promoting Education for Sustainable Development in the Early Years: A *Participatory* Action Research Study". This was as reflected in documents used in my application for research ethics approval as well as for obtaining consent from the participants. However, after commencing the study, I realised that practitioners' busy schedules made the fully participatory aspect unrealistic. My focus then shifted to the study becoming a collaborative action research project with me facilitating issues and actions with practitioners and children in the setting.

10.5 A model for promoting ESD in ECEC

The key findings of this study (discussed in Sections **10.2** to **10.4.4**) have shown how some factors enhanced effective teaching and learning for sustainable development in ECEC. This has enabled me to visually propose a model called the Early Childhood Sustainability Enhancement Model that shows these key findings as pointers to the processes for promoting ESD in ECEC. This Model is presented below:

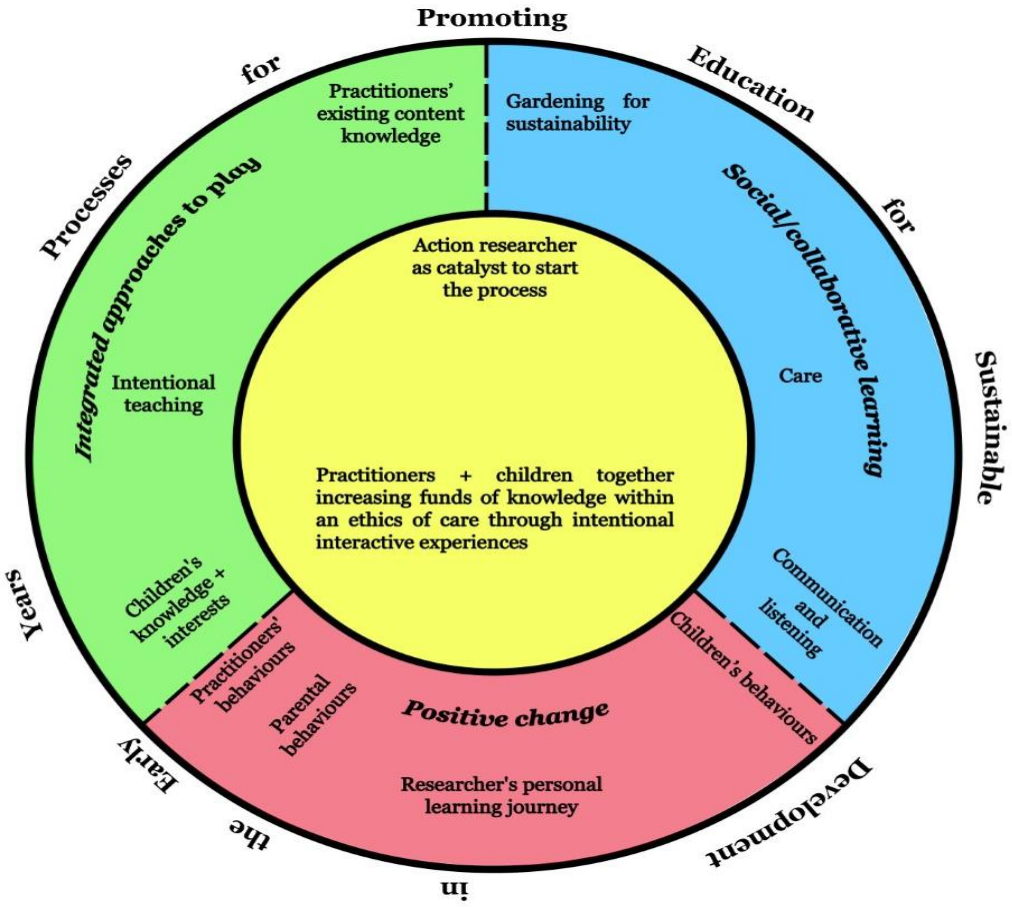


Diagram 10.5: The Early Childhood Sustainability Enhancement Model

The Early Childhood Sustainability Enhancement Model encompasses key findings from this research. In the inner circle, I have made provision for the inclusion of an action researcher which represents my role in the study as I acted as a catalyst/facilitator to start the project. As the research progressed and as I worked collaboratively and democratically with participants in the setting, my role became

more facilitative and less directive (Stringer, 2014). This made it possible for all participants' (researcher, practitioners and children) funds of knowledge to increase within an ethics of care through intentional interactive experiences either planned for the children or arising spontaneously from participants' interactions with one another and with their environment.

The outer circle, which is broken into three sections, represents key findings discussed in Sections 10.1 to 10.3.3. The top section on the left-hand side shows the process of utilising integrated approaches to play which focus on practitioners' existing content knowledge, children's interest and knowledge which help to support practitioners' intentional planning for children's learning for sustainability.

The second section on the right-hand side shows how social/collaborative learning is effective for teaching and learning for sustainability in ECEC. In this section, the focus is on gardening and other activities (both indoors and outdoors) that provide opportunities for participants to show caring actions towards others as they interact with one another and their environment. The interactions fostered communication and listening amongst us all, as we asked and answered questions or pursued activities based on our, and children's, interests. This enabled us to increase and enhance our funds of knowledge within an ethics of care.

The lower part of the last section focuses on positive change observed in all participants' behaviours. These notable positive changes in knowledge, values, attitudes, skills and practices of all participants have already been discussed in Sections 10.3 to 10.3.3 above.

10.6 Evaluation of key findings and their implications for practice

Education for sustainable development (ESD) encourages participants to be well-equipped with the knowledge, skills, values and attitudes that will empower them to make meaningful contributions to sustainable development, so that they can make "informed decisions and responsible actions for environmental integrity, economic viability and a just society for present and future generations" (UNESCO, 2017:7). If people are not acting responsibly, this raises the possibility that educational systems are deficient, insufficiently focused on helping learners to think critically about their

own lifestyles and thereby allowing current unsustainable practices to continue (UNESCO, 2014b). To address this situation, the Global Action Programme (GAP, 2016) raised the need for education to be re-oriented towards providing opportunities for, as well as supporting learners to acquire the necessary knowledge, skills, values and attitudes needed to contribute to sustainable development. Even though the 5-year Global Action Programme on Education for Sustainable Development (GAP ESD, 2015-2019) has come to an end, ESD remains a priority from 2020-2030 with the follow-up framework called Education for Sustainable Development: Towards achieving the SDGs - ESD for 2030 (UNESCO, 2019). The new framework aims to build a more just and sustainable world through strengthening ESD and contributing to the achievement of the 17 SDGs, especially in its Priority Action Area 2 on transforming learning and training environments. This priority recognises the need to promote whole institution approaches that emphasise the importance and necessity for educational institutions at all levels – from early childhood to higher education and lifelong learning in communities, to collaboratively work together. This is in addition to having strategic policies and measures to reinforce the interaction and cooperation of these educational settings.

In line with the need for ESD to remain a priority especially in encouraging participants to be well equipped with the knowledge, skills, values and attitudes that can support them in living sustainably, and as provided by SDG 4.2 that: *"By 2030, ensure that all girls and boys have access to quality early childhood development, care and pre-primary education so that they are ready for primary education";* and SDG 4.7 which also provides that: *"By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development*"; I am committed to continue my work in this respect in relation to the provisions of the new framework and SDG 4 by ensuring inclusive and equitable quality education as well as promoting lifelong learning opportunities for all.

In evaluating key findings from this study, I focus first on the issue of practitioners' variable levels of knowledge of sustainability highlighted from their interviews. Collectively, these identified a need for relevant professional learning opportunities on

the topic. In view of this need, I proposed the Early Childhood Sustainability Enhancement Model (**Diagram 10.5**) which emphasises the role that collective effort amongst all participants within a socio-cultural context plays in teaching and learning for sustainability. As shown in the Model, democratic and collaborative working between myself as an action researcher and practitioners enabled us to effectively plan and implement activities with a sustainability focus, thus providing professional learning opportunities for them.

Involving practitioners in action research with a focus on promoting ESD supported them to build upon their existing funds of knowledge and skills to learn about and promote ESD alongside the children. Action research fostered collaborative knowledge acquisition processes when practitioners were engaged as co-researchers and this enabled them to actively participate in the research. The team (practitioners and myself) developed better understanding of issues under focus as we equitably shared diverse knowledge and experiences; jointly planned for and implemented activities for the children; and reflected on our actions in democratic partnerships – all with the goal of improving the quality of ESD practice in the setting. These learning opportunities provided practitioners with knowledge and understanding of practices and procedures that had the capability to enhance their teaching and learning for sustainability (McKeown, 2002; 2013; UNESCO, 2016, 2018, 2019).

The professional learning opportunities for the practitioners also embodied both the theory and practice of sustainability for its effective embedding into the EYFS such as was shown in reviewed studies (see Mckeown, 2002, 2013; Engdahl & Rabušicová, 2011; Ogelman, 2012; Luff, Miles & Wangui, 2015). Embedding both theory and practice of sustainability in professional learning opportunities matters because ESD is more than a knowledge base related to environment, economy and the society. ESD supports participants by addressing learning skills, perspectives, values that have the capability to guide and motivate them to seek sustainable livelihoods, participate in a democratic society as well as live in a sustainable manner (McKeown, 2002, 2013; Laurie et al., 2016). Developing these skills encouraged practitioners in the study to be motivated and enthusiastic in embedding ESD in their practice, as the relationship between a teacher's own values and the skills needed to teach particular concepts, is important (McKeown, 2002, 2013; Sund, 2008; Sund & Wickman, 2008; Laurie et al., 2016; UNESCO, 2017b; UNESCO, 2019). Research evidence has also shown that

such professional learning opportunities would enable practitioners to extend their pedagogical knowledge base in areas of sustainability and make them more able to work confidently and actively with both environmental and sustainability issues with children than those who have not had such professional training (see Tarr, 2008; Ärlemalm-Hagsér & Sandberg, 2011; Ward, 2014; Hill et al, 2014), thereby raising the quality of ESD in early childhood education. My study has added to this body of knowledge by applying it in the UK context through providing practitioners with opportunities for professional learning opportunities on issues of sustainability. The growing of a wildlife garden laid out to attract bees as a starting point for co-constructing knowledge for sustainability fostered collaborative working between myself and practitioners that enabled us to provide specific learning activities for children in the setting. The specific learning opportunities were shown to link to the key principles of ESD and provided clear links between ESD and EYFS and strong structure for future work.

Currently, 'sustainability' is not explicitly mentioned in the Early Years Foundation Stage (EYFS) (DfE, 2017) and this needs to be addressed (GAP, 2016; Boyd et al, 2017), bringing England into line with curricula such as the Early Years Learning Framework in Australia (Department of Education and Training, 2009), Curriculum for the Preschool in Sweden (Ministry of Education & Science, 2010), the Framework Plan for Kindergartens in Norway (Norwegian Directorate for Education and Training, 2017) and the Te Whāriki, in Aotearoa, New Zealand (Ministry of Education New Zealand, 2017), that provide for children's learning and active participation in civic life and for sustainable development. Despite research evidence that highlights and raises awareness of the importance of sustainability for young children's learning, it is a concern that sustainability is not mentioned in the current proposed reforms to the EYFS (DfE, 2019). On a positive note, and in consonance with recommendations from my research, calls have been made by educators for the need to introduce sustainability in the early years curriculum (The Guardian Newspaper, 2020). In addition, making sustainability matter for the early years is now a focus of a national petition (see change.org, 2020). Based on these developments, I concur with the view that sustainability matters in the early years curriculum. Even better would be to directly incorporate the principles into the EYFS, future proofing its implementation so that it becomes a part of the everyday experiences of children in early years settings in

England. (Gilbert, Rose & Luff, 2015; Siraj-Blatchford, 2016; Boyd et al, 2017). My work with practitioners in my study have shown that projects, experiences and activities that are linked to ESD can support children's holistic development across all the seven areas of learning in the EYFS. In Table 8.3 (Chapter Eight) and Table 9.7 (Chapter Nine), such links between activities provided for children's learning for sustainability and the EYFS were made explicit.

The incorporation of 'sustainability' into the EYFS would require additional funds to enable settings to better invest in professional learning opportunities for practitioners. The learning opportunities would support practitioners to develop knowledge and skills to learn about and promote ESD with the children in their care. Such learning opportunities would expose them to different ideas for creative ways to reduce and re-use resources, thus enhancing their teaching and learning for sustainability. Sustainability should be about early years settings finding ways to reduce the number of items that they purchase and finding imaginative and sustainable ways to resource activities. Ideally, ESD resources can be borrowed, shared and found, re-used and recycled. Practitioners need to be imaginative when considering what materials can be re-used and recycled to reduce unsustainable consumption of resources. I bought second-hand books to read with the children, and we (the team) encouraged re-using resources such as old newspapers to make flowerpots, yoghurt pots, cereal packets and cardboard boxes for activities in the setting. I brought in my gardening tools to use in the garden and gave the nursery my food waste caddy (which remains there to date).

To successfully re-orient early years education to address sustainability, practitioners need to identify knowledge, issues, perspectives, skills and values that are central to sustainable development in each of the four dimensions – natural (environmental), social, economic and political (McKeown, 2002; UNESCO, 2017a; Grindheim, 2019). To achieve this goal, practitioners need to create a shared purpose, as the greatest obstacle to re-orienting an educational system is the lack of clarity regarding goals (McKeown, 2002, 2013). On this note, and as shown in my study through the proposed Early Childhood Sustainability Enhancement Model, practitioners worked collaboratively to complement their personal understandings of sustainability and develop a shared practice, thereby increasing their funds of knowledge. My awareness that ESD is about values, especially those that have respect at the centre of relationships, enabled me to show respect to all participants whilst at the same time,

encouraged them to be in control of their lives and contexts through active participation and having their voices heard in decision-making. In turn, this supported their development of confidence, skills, and values in the area of sustainability – through their experimenting with many forms of play activities and approaches that have the potential to contribute to children's capacities to engage in meaning-making and develop their understandings of sustainability (Wood, 2010, 2013). Practitioners grew in confidence as the action research project progressed and their knowledge of sustainability developed as we worked together in a socio-cultural context (Vygotsky, 1978). Consequently, their planning for intentional teaching on sustainability issues was effective. This was further supported by our use of participants' experiences (funds of knowledge) as a starting point for learning for sustainability, enabling them to identify issues to explore as well as reflecting and analysing those issues (Moll et al., 1990, 1992). Most importantly, my presence and facilitation of some of the activities at the setting enabled us to learn together as we co-constructed our knowledge of sustainability. As they gained actual experience of the ways that sustainability issues could be presented to the children, practitioners became confident in suggesting new activities, thereby corroborating and extending findings from reviewed studies to the UK context (see Tarr, 2008; Prince, 2010; McNaughton, 2012; Norðdahla & Jóhannesson, 2014).

On this note, the goals of teaching and learning for sustainability in the early years can be widely achieved through action research as it enabled me to gain answers to the main research question that focused on how teaching and learning can be shaped to promote better knowledge and practice of ESD within an early years setting. The team's experimentation with various activities enabled us to determine the ESD issues to explore as well as the activities to plan for the children to meet the goals set out in the research.

The Model also showed that positive relationships enshrined in day-to-day caring between children and their educators promote effective teaching and learning for sustainability. Relationships were enhanced through quality time spent together, especially outdoors, where opportunities were created for dialogue and conversation that enabled children to gain better understandings of sustainability-related issues as they co-created knowledge with others (Sylva et al., 2004a, 2004b). Currently, under the EYFS, practitioners have little time to research and plan activities with a

sustainability focus as their time is allocated to planning daily for children's learning, carrying out observations and writing reports (DfE, 2017). Clearly the EYFS needs to be structured in ways that allow for quality time when practitioners and children can engage in dialogue and conversation for deeper learning of issues of sustainability; as well as ways that give practitioners time and energy to research and design activities with a sustainability focus that can be incorporated into the EYFS.

Based on the above statements, and as highlighted in the proposed Model (**Diagram 10.5**), it would beneficial for a setting to have a member of staff with an interest in sustainability who is willing to work in collaboration with others to develop and share creative ways of teaching and learning for sustainability. This sustainability advocate would act as a facilitator to support practitioners in developing the skills and confidence to carry out activities related to sustainability. As it is the practice in early years settings to have staff with designated responsibilities like a Special Educational Needs Co-ordinator (SENCo) or Physical Activity and Nutrition Co-ordinator (PANCo) role, settings could also nominate members of staff to carry out designated responsibilities for sustainability. I can play a role in this as I aim to actively promote the Early Childhood Sustainability Enhancement Model in early years settings through publications and an integrated online presence. This would support practitioners in using the Model as I believe that it is flexible and can be easily adapted in different settings to accommodate their individual working cultures and foster the deeper collaborative working that is necessary for teaching and learning for sustainability.

In line with global requirements for educators of young children's learning for sustainability to underpin their work with concerns and principles of ESD (UNESCO, 2017a, 2017b; Huggins & Evans, 2018; UNESCO, 2019), practitioners would gain professional learning opportunities if they were engaged in workshops designed to 'scaffold' their knowledge and understanding of sustainability issues. They would be able to reflect on and identify the knowledge, issues, perspectives, skills and values that are central to sustainable development based on the creation of a shared purpose to improve practice and contribute to quality education in the early years (Vygotsky, 1978; Tarr, 2008; Ward, 2014; Hill et al, 2014; UNESCO, 2014b). Practitioners would also be able to experiment with activities in each of the four dimensions of sustainable development in small steps (McKeown, 2002; Grindheim, 2019).

My study has shown how participants worked collaboratively in an innovative project to foster the achievement of some educational goals of sustainability: goals that promoted children's and practitioners' knowledge, values, attitudes, skills and practices of sustainability through the holistic integration of the four dimensions of sustainable development into the pedagogy and practice of an early years setting in England. This was achieved through an exploration of play-based approaches that provide strong structures upon which to develop ESD within the EYFS curriculum. In line with the global recognition of ESD as an integral element of quality education (UNESCO, 2014b; 2019), the project has shown ESD to be an important contributor to quality education in the EYFS (DfE, 2017), and it has also proved to be worthy of time and effort as well as resources. Based on these declarations, there is a need for the expansion of this kind of programme and these ways of working, a campaign for a policy on sustainability in England's ECEC curriculum, the EYFS (DfE, 2017). Such a policy should specifically lay out plans that contain goals aimed at strengthening early childhood development by linking them to the Sustainable Development Goals (SDGs) as these are significant for early childhood. Policies should address issues like poverty, hunger, health and well-being, quality early childhood education, reduction of gender inequality, water and sanitation, and inequality. Policy should include guidance about acceptable procedures for advancing sustainability goals in young children's teaching and learning in early years settings, perhaps even adopting the Early Childhood Sustainability Enhancement Model. The achievement of the sustainability goals in this way could be used as a measure of quality in the EYFS. If these innovations became policy, all those who work and practice in early years setting would be involved in sustainability as it is expected that appropriate institutional infrastructure would accompany the policy (especially funding and resources) will be put in place. In this way, the creation of a policy on sustainability would help to bring about social change as well as avert worsening global crises brought about by humanity's unsustainable lifestyles.

10.7 Contributions of the research to ECEC

This research has contributed to ECEC by reporting on a project that explored the ways in which practitioners' and children's knowledge, values, attitudes, skills and practices

of sustainability can be understood and promoted within an early years setting in England. This is in response to reviews of research (e.g. Davis, 2009; Siraj-Blatchford et al., 2010: UNESCO, 2014a) on the need for more research to be carried out in the field of education for sustainable development (ESD) in the early years. In addition, the research has demonstrated that a pathway to a more sustainable society depends on how well societies can educate the next generation (Pramling Samuelsson & Park, 2017).

This research showed ways of working that can promote teaching and learning for sustainability in the early years within a curriculum that is silent on 'sustainability'. This was through an exploration of the eleven key approaches identified in the literature review as having the potential to foster effective planning and implementation of practical activities with sustainability focus for children. The research also showed how these activities can be explicitly linked to the Early Years Foundation Stage (EYFS) curriculum in England. In addition, these key approaches have shaped the study as well as proved useful in analysing data collected to answer the research questions.

The methodology in the form of practical action research where I positioned practitioners as co-researchers from the commencement of the project, has demonstrated that learning for sustainability can be effective when participants work collaboratively, sharing and co-constructing knowledge in democratic environments, and where everyone is supported and encouraged to make contributions through dialogue and conversation (McNiff & Whitehead, 2011; Creswell, 2012; Stringer, 2014; Coghlan & Brannick, 2014). The methodology and combined theoretical framework of Vygotsky's (1978) socio-cultural theory, Moll et al.'s 'funds of knowledge' (1990, 1992) and Nodding's ethics of care (1984, 2013), were beneficial and enriching when addressing the research question as they facilitated the exploration of relationships between researcher and practitioners (Blaikie, 2007; Hine, 2013; Brannelly & Boulton, 2017; Bergmark, 2019), between practitioners and children, and between children and their peers as well as all participants' relationships with each other and their environment (Ritchie, et al., 2010; Prince, 2010). In addition, they also offered insights into ways that practitioners' and children's knowledge, values, attitudes, skills and practices of sustainability can be understood and promoted within

an early years setting that could be adaptable and replicated in other early years settings.

Findings from the study have demonstrated that before ESD activities can be effectively planned and implemented in the early years, shared purpose and goals must be collectively agreed by practitioners with the aim of promoting environmental, social, economic and political sustainability within the setting (McKeown, 2002; Davis & Gibson, 2006; McNiff & Whitehead, 2011; Grindheim, 2019). This means that there needs to be clearly constructed vision and ways of doing that will ensure that people are brought together for a common purpose, and a reorganisation of pedagogical approaches to teaching and learning for sustainability. This was evidenced in the study as regular meetings with the practitioners (especially after the initial one-to-one interviews with them) were arranged to ensure shared vision and goals of the study.

My adoption of the three theoretical perspectives, particularly Noddings' ethics of care, enabled me to show how natural caring, an often taken-for-granted notion in the early years, is a vital ingredient for effective teaching and learning about sustainability in ECEC (Noddings, 1984, 2013). I evidenced this in the ways that I focused on participants' relationships with one another in the setting which was also extended to plant and animal life. This also explains why the previous chapter (Chapter Nine) is the longest of the discussion chapters as it brings the ethics of care to the forefront of effective teaching and learning for sustainability in early childhood education and care.

The application of an ethics of care perspective to educational settings is evident in the ways that practitioners were placed at the heart of teaching and modelling sustainability issues and practices to children (Noddings, 1984, 2005, 2013). I have also shown this in the ways that the care perspective fostered participants' co-construction of knowledge over a period which enabled trust to develop (Vygotsky, 1978; Noddings, 2005). This study also showed how ethics of care requirements have informed this study in the effective teaching and learning of sustainability. This is regarding the need for educators to be knowledgeable in the field of topic under discussion (Noddings, 2005; UNESCO, 2014a, 2014b; Pramling Samuelsson & Park, 2017; Wals, 2017); have a fund of knowledge about the children in their care (Moll et al., 1990, 1992; Hedges, Cullen & Jordan, 2011), and make settings conducive for

moral growth (Johansson, 2002; Noddings, 2005). In addition, the ethics of care perspective enabled me to focus on practitioners' needs, views and actual experience (thus acknowledging their funds of knowledge) and on becoming active partners in planning and implementing activities for children in the setting (Noddings, 1984, 2005, 2012; UNESCO, 2014b).

With regards to the incidental outcome of the study that highlights children's need for acts of love and intimacy in addition to those of natural caring expressed by participants, the place of love and intimacy, especially in the light of present fears and anxiety about appropriate physical contacts between practitioners and children in early years settings needs to be re-visited (Page, 2018). This has implications for ECEC as the study has demonstrated that children need acts of love and intimacy in addition to care for effective teaching and learning for sustainability.

This study also contributes to academic research in that I have developed a model for the effective promotion of ESD in early childhood education and care. The model was developed from key findings from the research and named *The Early Childhood Sustainability Enhancement Model* (see Diagram 10.5).

10.8 Challenges of the study

One of the challenges that I encountered during the research study was being a participant observer and researcher at the same time. This tended to be time consuming as I joined in activities with practitioners and children during the research study. More time was later spent outside the setting, usually in the evenings, to write up field notes in my diary. I therefore sometimes struggled to balance participation with observing, but I was able to overcome this challenge as I managed to absorb situations with enough self-control to balance these issues in a professional manner (Cohen et al, 2018).

Another major challenge experienced in a participatory study such as the one reported in this thesis was the variable levels of practitioners' knowledge of sustainability-related issues. As an action researcher, the assumption is that I would enjoy a higher position due to my academic expertise which gives me the power to take decisions and act on them as I took responsibility for carrying out the research (Bergmark, 2019).

Adopting this stance would have made the practitioners feel inferior because it would portray them as lacking academic knowledge. However, the research design in the form of action research whilst working within an ethics of care enabled me to reflect on the hierarchical power position and the responsibilities that follow. I was able to rethink my role as an action researcher by examining the changing roles between myself and the practitioners that created new conditions for me to reconsider the power relations and responsibilities.

Based on this awareness, and to ensure validity of the research, I established trusting relationships with the practitioners. Establishing this kind of relationship was not easy as they were initially wary of me and my intentions, but the situation improved with time. It was important for me to recognise their abilities and knowledge, and for them to appreciate mine. This led to the greater need for more time to explore their understandings of the concept at the beginning of the study. I gently invited them to participate in the research process and they reciprocated this gesture by agreeing to be engaged as co-researchers and inviting me to participate as a member of the nursery team (Ritchie et al., 2010). We shared our views and perspectives; shared reflections during staff meetings to ensure that there was shared understanding and purpose of the research before collaboratively planning and implementing activities with the children.

I appreciated practitioners' contributions to the research, especially in the aspects of planning activities and data collection. There was a sense of collegiality between us and I was part of the nursery team. With their participation in the research, they also felt a sense of ownership of the research project and this is evidenced in the notice board shown in Photograph 6.5 (Chapter Six) captioned: "***Our*** Garden Project with Yemi". I was also flexible in my approach to the research as I listened to and sometimes adjusted the research plans to accommodate ideas from their practice initiatives. All the listed actions that I took were significant in enhancing effective teaching and learning for sustainability in the early years setting.

10.9 Strengths and limitations of findings in this research and opportunities for further research

One of the strengths of this study lies in the fact that it commenced at a juncture in the history of early childhood in England when growing awareness of the significance of

early childhood ESD is escalating. It also explored what happens in an early years setting in England by focusing on practitioners' perceptions of ESD and how they link their understandings to practice initiatives.

I carried out the study in only one early years setting. This provided opportunities for me to be fully involved with the research setting and participants. I was able to offer as sound the representation of my field of study as my use of various data collection methods allowed this. My presentations of findings in Chapters Seven, Eight and Nine are also authentic. I have been honest in carrying out detailed observations of participants' activities and reporting them in rich narratives, especially in the incorporation of participants' true voices, views and engagement of practitioners as co-researchers.

As the study is a qualitative one, I did not start the research process with pre-conceived hypothesis. Rather, my findings moved from specific to general i.e. from data to description of processes, thus making data analysis inductive rather than deductive (Bogdan & Biklen, 2007; Hughes, 2010; Savin-Baden & Howell Major, 2013**).** This process was further enhanced by my adoption of a combination of theoretical perspectives that were used to interpret participants' actions and their understandings of the world they live in.

A limitation of a small-scale study such as the one reported in this thesis where only one early childhood setting, a day nursery, was used, means that findings cannot be generalised to other settings within England for the following reasons. Firstly, it is assumed that the culture of each setting differs and hence, how things are done in one setting may be different from another. Secondly, individuals are exposed to different influences which shape their perceptions and understandings of concepts and issues. On this note, practitioners' and children's perceptions cannot be generalised as these are also likely to vary across settings. Hence, to explore how practitioners and children attitudes, skills and practices of sustainability can be promoted in an early years setting, it would be beneficial for me in the future to explore whether the model I have developed that highlights these processes can be useful in other ECEC settings. This will also be with regards to exploring issues of practitioners' planning and implementation of activities with sustainability focus in these early years settings as there is the possibility of generating outcomes that are different from those of this

study. Parental involvement that arose from their children's participation and learning in the project could also be explored in the future to engage parents in sustainability projects that will capitalise on their funds of knowledge in creative ways that can enhance learning for all involved in the projects.

10.10 Conclusion

This study commenced with my desire to explore how practitioners' and children's knowledge, values, attitudes, skills and practices of sustainability can be understood and promoted within an early years setting in England. A critical review of literature on environmental education and education for sustainability discussed in Chapter Three highlighted various methodologies and methods useful for carrying out this exploration. This review of literature provided relevant pedagogical approaches which have helped to shape the research process. The adoption of action research, coupled with a combination of three theoretical perspectives, provided a powerful pedagogical framework for this research as participants worked collaboratively to explore issues of sustainability in a given context as well as providing answers to the research question.

Findings from this thesis have highlighted how practitioners' and children's knowledge, values, attitudes, skills and practices of sustainability can be understood and promoted within an early years setting in England. In addition, as practitioners' confidence and knowledge of sustainability practices developed through collaborative working with the action researcher and the children, participants developed knowledge and understandings about their environment. They also gained skills in expressing care and connectivity towards each other and towards their environment through fostering friendships, caring for others, the environment and other living organisms. practitioners gained experience regarding activities they could carry out with the children on sustainability issues (Ogelman, 2012), so underwent professional development in sustainable development. This development is one that puts practitioners at the heart of quality early childhood teaching and learning for sustainability (Osadiya & Luff, 2018).

As my research was carried out with practitioners and children in a day nursery, the participatory approaches I adopted have been effective in achieving the aims of the

research. This suggests that there are potential benefits in engaging participants as co-researchers in educational research as they will be able to engage more deeply with the research process especially when democratic approaches are utilised to encourage participation (McNiff & Whitehead, 2011; UNESCO, 2014b). Researcher attitude is also an important issue in the research process. My positive attitude evidenced in my approach, language, opportunities for suggestions, conversations and flexibility, has enabled practitioners and children to be open as well as to constantly reflect on their work during the research process.

The theoretical and methodological insights that I have achieved through this project can be applicable to other academics, researchers and students in early childhood education and care. I believe that there is scope to share the innovative ideas and approaches contained in the Early Childhood Sustainability Enhancement Model developed for the promotion of ESD more widely in early childhood education contexts.

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Appendix 1: Key global conferences and initiatives on sustainable development

Date & organisation	Initiative	Outcome
1972 United Nations Conference on the Human Environment *Stockholm, Sweden*	To discuss sustainability on a global scale.	For governments and peoples to exert common efforts to preserve and improve the human environment for the benefits of all (UN Environmental Programme).
1977 Intergovernmental Conference on Environmental Education, *Tbilisi, Georgia*	To identify new strategies, incorporated into development in order to achieve sustainable development.	Environmental education should be provided for all ages & at all levels in formal & informal education.
1987 World Commission on Environment & Development *Geneva, Switzerland*	To discuss and develop guiding principles for sustainable development.	Our Common Future (Brundtland Report)
1990 World Conference on Education for All, *Jomtien, Thailand*	To make the goal of basic education for all an attainable one.	Education is a fundamental right and an indispensable key to overcoming world's daunting problems.
1992 UN Conference on Environment & Development, *Rio De Janeiro, Brazil*	To reaffirm the Declaration of the UN Conference on the Human Environment adopted in 1972 and build on it.	Agenda 21, Chapter 36: Promoting Education, Public Awareness and Training towards sustainable development.
2000 World Education Forum, *Dakar, Senegal*	To reaffirm commitment to the achievement of Education for All goals and targets for every citizen and for every society.	National Education for All (EFA) forums will be strengthened or established to support the achievement of EFA

2000 United Nations	To declare commitment to free fellow men and women from the abject & dehumanising conditions of extreme poverty.	The Millennium Development Goals (2000-2015) consisting of 8 goals.
2002 World Summit on Sustainable Development, *Johannesburg, South Africa*	To ensure that the rich diversity of nations becomes a collective strength for constructive partnership for change & the achievement of the common goal of SD.	Agreement to achieve goals should be a collective process that involves all major groups and participating Governments.
2002 United Nations General Assembly, *New York, USA.*	To reaffirm the internationally agreed goals of Agenda 21, Chapter 36, and to consider adopting a decade of education for sustainable development starting in 2005.	Decision made to proclaim the ten-year period beginning on 1st January 2005 the United Nations Decade of Education for Sustainable Development. UNESCO designated lead agency for its promotion.
2003 World Summit on the Information Society, *Geneva, Switzerland*	To aid understanding to enable action to be taken for planetary sustainability especially in developing specific Information and Communications Technology (ICT) programmes for professional training.	Everyone should have the necessary skills to benefit fully from the Information Society, as ICT can contribute to universal education worldwide.
2015 United Nations General Assembly, *New York, USA.*	To identify a new set of goals to build on the successes of the MDGs as progress was uneven across regions and countries.	Sustainable Development Goals (2015-2030) consisting of 17 goals also known as: "Transforming Our World: the 2030 Agenda for Sustainable Development".

Appendix 2

TABLE OF ESD CASE STUDIES			
Year Author *Country*	**Participants** *Type of study*	**Focus**	**Findings**
2006 J Davis M Gibson *Australia*	CS&CH, 2R; *Qualitative*	To explore rationale for integrating sustainability practices into an EY centre.	Active citizenship; enhanced outdoor play; learning spaces & waste management practices.
2007 F McArdle M Spina *Australia*	Ts, 9 CH (8yrs), Artist; *3 visual arts workshops*	To examine the place of art in the curriculum for young children of refugee families	The arts helped children to tell *their* stories rather than stories that adults might predict that they will tell.
2008 K Tarr *Australia*	2 EYTs, 28 CH; *5 workshops*	To explore various techniques for using the arts	Arts-based pedagogies effective for teaching young children about the natural world.
2009 A Gambino J Davis N Rowntree *Australia*	21 CH, 15 P, 4T from 3S; *Interpretive case study; project*	To document children's development, of knowledge, attitudes and actions/advocacy in support of an endangered native animal, the Greater Bilby.	Changes in children's knowledge & changes in actions & advocacy to protect endangered animals; changes in attitudes towards others & animals.
2009 B Chan G Choy A Lee *China*	T & CH; *Integrated approach*	To raise children's awareness of environmental sustainability using concept of reusable waste in different activities	Children gained understanding of the importance of caring for nature & all creatures; the interdependence of human & nature; and the beauty of living harmoniously.
2010 C Prince *New Zealand*	4 Ts, 2 EYC, 8 CS, 6 P, 6 CH; *Qualitative, case study; participatory approaches*	Focus on how ESD can become an integral part of Te Whāriki.	Increased parental, children's & teachers' knowledge of sustainability
2010 J Ritchie I Duhn C Rao J Craw *New Zealand*	10 EYC, R, T & CH; *Qualitative; grounded in an ethics of care*	To build a culture of ecological sustainability practices in ECE.	Engagement in project stimulated new ways of thinking and modes of pedagogical practice; responsiveness & reciprocity among children, teachers & the wider community.
2011 I Engdahl M Rabušicová *National: 241 cities & regions from 63 countries*	9,142 CH (2-8yrs), R, *Informal interviews*	To enhance ESD among young children by gathering knowledge about their thoughts, comments & understanding of a picture showing the globe	Children's responses revealed their rich understandings of the earth, people's objectives & actions
2011 E Ärlemalm-Hagsér A Sandberg *Sweden*	32 DCA from 30 PS; *Socio-cultural*	To explore day care attendants' comprehension of SD; analyse the associated pedagogical practices at their place of work in pre-schools.	Increase in participants' knowledge about relationships between people & between people & nature
2012 H Ogelman	13 L from 2 U; 1 biology	To introduce soil & concepts related to soil	Increase in soil-related knowledge of children in experimental group;

Turkey	T; 1 FE; 1 nurse; EYT and 180 CH; *Experimental, constructivist approach*	conservation to children aged 5-6 yrs.	increase in teachers' teaching experience; increase in parental knowledge
2012 G Mackey *New Zealand*	30 CH (3-4yrs), 3 T; *Participatory case study*	To create sustainable environments by working with a set of guiding principles that empower children & young people to explore ideas, make decisions & act within their communities.	Children become more aware of what imparts on them & others when allowed to participate in discussions on global issues.
2012 S Stuhmcke *Australia*	22 CH and Ts *Action research case study*	To explore experiences of kindergarten children using a project approach to learn about environmental sustainability	Young children can be agents of change for sustainability; think critically about environmental and sustainability issues & able to create change in their local contexts
2012 E Fägerstam *Australia*	13 EE Centre Officers; 8 Ts; *Qualitative interviews*	To explore observations & perceptions of teachers about children's experiences of nature.	Children & young people have limited experiences of nature.
2013 E Ärlemalm-Hagsér *Sweden*	2 PS T, 17 CH (5-6yrs); *Qualitative, guided by critical theory. 4-week field study.*	To explore participation, agency & shared meaning-making in energy conservation activity	Children are engaged & active as equal participants in dialogue; eager to understand & take part.
2013 S Edwards A Cutter-Mackenzie *Australia*	16 EYC, 114 CH (4-5yrs), 16 T; *Vygotsky's combinatorial activities in 6 research clusters*	How 3 play types of play-based pedagogy prompt teacher planning for sustainability.	Purposefully-framed play was most successful; followed by modelled play & lastly open-ended play
2014 C Haas G Ashman *Australia*	T, 25 CH and P volunteers; *Ecopedagogy methodology*	To raise participants' awareness of their biotic & social community; understand their physical place in the world.	Transformative effects observed on children's behaviour from nature play experiences
2014 K Norðdahla I Jóhannesson *Iceland*	25 T; *Interviews*	To explore teachers' views of the outdoors; to further their understandings of ESD; to determine how to encourage children's actions in ESD direction.	Outdoor education can affect children in a multiple of ways & with opportunities to further their environmental awareness
2014 K S Ward *Australia*	10 educators from 4 separate PS; *Action research*	Children's interests used as stories used to support their learning about the natural world.	Educators developed an appreciation for the natural world & found new ways to engage the children with flora and fauna in the locality.
2014 C Caiman, I Lundegård *Sweden*	PS CH (4-5yrs); *Children's curiosity and interests used as*	To examine how agency is constituted in the context of 4 – 5-year-old Swedish preschool children's science-related issues	Children's agency involves their conscious decision making on environmental issues whilst displaying caring attitudes and anticipations towards living organisms.

	pedagogical tools for activities	while working in the garden.	
2014 A Hill, et al. *Australia*	EY educators and T from variety of PS contexts; PST and P; *3 ECEfS professional learning workshops*	To explore how adults who work with young children conceptualise & describe their sustainability practice initiatives.	Clear links found between their conceptualisations of sustainability & their reported practice initiatives.
2014 F Sadik S Sadik *Turkey*	323 TC in social science education and science and technology education; *Descriptive study using questionnaires*	To investigate knowledge & attitudes of teacher candidates towards the environment.	Participants' knowledge found insufficient for effective environmental education in their practice. Global environmental issues should be included in course contents for enrichment.
2015 P Luff Z Miles C Wangui *UK/Kenya*	Practitioners & CH in one setting in each country; *Integrated approach*	Bat conservation.	Co-construction of knowledge as model for practical and investigative approach.
2015 Z Nikiforidou Z Miles P Luff *Dorset, UK*	Practitioners & CH; *Environmental education projects.*	To highlight the role of EY teachers and teacher educators in promoting a sustainable world.	Cross curricular, experiential learning can be effective for young children's learning of complex environmental topics.
2015 E Ärlemalm-Hagsér I Engdahl *Sweden*	22 CH (5-6yr), T; *Case study.*	To holistically integrate the social, economic, environmental & political dimensions of sustainability in The Egg Project.	Learning process empowered the children to demand changes in their local settings.
2016 S Edwards et al. *Australia*	6 educators, 128 CH in 3 professional learning sessions; *Qualitative.*	To examine the interconnectedness of sustainability, well-being and popular culture in ECE.	Topics specific to wellbeing & environmental education are generated when planning from children's popular culture interests with specific focus on food products.
2016 C Fisher-Maltese *USA*	71 second graders (7-8-yrs); *Quantitative & qualitative methods.*	To explore how a school garden can improve student's environmental attitudes & help them to develop as environmental stewards	Improvement in students' attitudes toward a more empathic view of nature.
2016 C Kiewra E Veselack *USA*	CH (3-5-yrs); *Qualitative.* *Case study*	To investigate how outdoor environments supported children's creativity & imagination.	Predictable spaces, ample & consistent time, open-ended materials, caring, observant adults, all contribute to children's creativity in the outdoors.

2017 F Borg *Sweden*	53 CH (5-6yr), directors, 89 guardians & 74 T. *Qualitative & quantitative.*	To enhance preschool children's existing knowledge for sustainability.	Children were already knowledgeable about some issues of sustainability at completion of preschool.
2017 F Borg M Winberg M Vinterek *Sweden*	53 CH (5-6yr) directors, 89 guardians & 74 T. *Qualitative & quantitative.*	To investigate influences of home and preschool related practices & factors on children's declarative and functional knowledge of sustainability.	Positive relationship found between children's declarative & functional knowledge of sustainability issues and the involvement of teachers & guardians in sustainability-related discussions and activities.
2018 H Wright P Luff C S Emre *England*	Practitioners & CH in 4 EY settings; *Qualitative. Collective case study.*	Value of reclaimed materials.	The use of reclaimed materials is variable across settings; ESD is not yet embedded within EYFS.
2019 N Hirst *England*	ST, L, CH & EYT from a range of settings; *Qualitative action research.*	To support students to take a holistic and evaluative view of the EYFS about ESD.	Students recognised authentic & contextualised sustainable assessment practices; learned positive conservation attitudes for themselves; & supported children to develop positive relationship with the Earth.

Key:

CH: Children

CS: Centre Staff

DCA: Day Care Attendants

EE: Environmental Education

EYC: Early Years Centre

EYT: Early Years Teachers

FE: Forest Engineer

L: Lecturers

P: Parents

PS: Pre-schools

PST: Pre-service Teachers

R: Researchers

S: Schools

T: Teachers

TC: Teacher Candidates

U: University

Appendix 3

14 January 2016

Anglia Ruskin University
Cambridge & Chelmsford

Cambridge Campus
East Road
Cambridge
CB1 1PT

T: 0845 271 3333
Int: +44 (0)1223 363271
www.anglia.ac.uk

Dear Opeyemi,

Re: Application for Ethical Approval

Principal Investigator(s)	Opeyemi Osadiya
Project Number:	15_16 008
Project Title:	Promoting education for sustainable development in the early years: A participatory action research project.

Thank you for resubmitting your documentation in respect of your application for ethical approval. This has been reviewed by the Chair of the Faculty (of Health, Social Care & Education) Research Ethics Panel (FREP) in advance of the next scheduled meeting in January.

I am pleased to inform you that your ethics application has been approved by the Faculty Research Ethics Panel (FREP) under the terms of Anglia Ruskin University's Research Ethics Policy (Dated 23/6/14, Version 1).

Ethical approval is given for a period of 3 years from 14 January 2016.

Please note: You must inform FREP of the data collection methods prior to starting. Please email frep-fhsce@anglia.ac.uk

It is your responsibility to ensure that you comply with Anglia Ruskin University's Research Ethics Policy and the Code of Practice for Applying for Ethical Approval at Anglia Ruskin University, including the following:

- The procedure for submitting substantial amendments to the Panel, should there be any changes to your research. You cannot implement these amendments until you have received approval from FREP for them.
- The procedure for reporting adverse events and incidents.
- The Data Protection Act (1998) and any other legislation relevant to your research. You must also ensure that you are aware of any emerging legislation relating to your research and make any changes to your study (which you will need to obtain ethical approval for) to comply with this.
- Obtaining any further ethical approval required from the organisation or country (if not carrying out research in the UK) where you will be carrying the research out. Please ensure that you send the FREP copies of this documentation if required, prior to starting your research.

- Any laws of the country where you are carrying the research and obtaining any other approvals or permissions that are required.
- Any professional codes of conduct relating to research or requirements from your funding body (please note that for externally funded research, a Project Risk Assessment must have been carried out prior to starting the research).
- Completing a Risk Assessment (Health and Safety) if required and updating this annually or if any aspects of your study change which affect this.
- Notifying the FREP Secretary when your study has ended.

Please also note that your research may be subject to random monitoring.

Should you have any queries, please do not hesitate to contact me. May I wish you the best of luck with your research.

Yours sincerely

Dr Sarah Burch
For the Faculty (of Health, Social Care & Education) Research Ethics Panel

T:
E:

cc: Claire Hooks (Sponsor)
Dr Paulette Luff (Supervisor)
Beverley Pascoe (RESC Secretary)

Appendix 4

Direct Dial:

16/11/15

Dear Opeyemi Osadiya.

Following our recent discussion on the 25th of September, 2015, we are pleased to hear that you are able to work with us for you project with Anglia Ruskin University.

We look forward to working alongside you and giving any support needed to complete this task.

Kindest regards

Selina Baylis

Setting Manager

Appendix 5

PRACTITIONER PARTICIPANT INFORMATION SHEET

Section A: The Research Project

1. **Title of project**
   Promoting Education for Sustainable Development in the Early Years: A Participatory Action Research Project.

2. **Brief summary of research.**
   This research is a participatory action research project which aims to promote education for sustainable development in the early years. The project will involve working collaboratively with you and other workers and assistants in the early years setting. In the attempt to promote environmental, social, political and economic aspects of education for sustainable development, education will be organised for children in the setting aged 2-4 years in an interdisciplinary and authentic way through an initial gardening project. It is expected that other concepts of sustainable development will be developed from the gardening project over the course of the project.

3. **Purpose of the study**
   This project is part of my PhD Early Years programme at Anglia Ruskin University. It is developed to explore how and why you and other workers in the nursery embrace sustainable development practices as well as how children's lifelong attitudes, values and skills in sustainable development can be promoted in the early years. It is also expected that an understanding of these practices will contribute to knowledge in this area of education for sustainable development in the early years.

4. **Name of my Supervisor(s)**
   Dr Paulette Luff and Dr Hazel Wright.

5. **Why have I been asked to participate?**
   You have been invited to participate in this project as you are one of the workers in the nursery setting and your involvement with my project would be appreciated.

6. **How many people will be asked to participate?**
   All practitioners in the nursery will be invited to participate.

7. **What are the likely benefits of taking part?**
The main benefit of this project is educational in nature as the aim of this study is to work collaboratively with you and your colleagues to explore how skills, values, attitudes and beliefs for sustainable education can be promoted in the nursery.

8. **Can I refuse to take part?**
Your participation is entirely voluntary, and you are free to refuse to take part in this project. If you do not want to take part, you can indicate this at the end of this information sheet.

9. **Has the study got ethical approval?**
The project has ethical approval from Anglia Ruskin University's Faculty of Health, Social Care and Education Research Ethics Panel.

10. **Has the organisation where you are carrying out the research given permission?**
Permission has been sought and obtained from the nursery manager for this project. This constitutes general permission to approach practitioners. It is however your decision to agree whether or not to take part in this project.

11. **If your research falls under specific legislation e.g. the Human Tissue Act (2004), you need to state that your research complies with it.**
N/A

12. **Source of funding for the research, if applicable.**
This project is funded by a bursary from the Faculty of Health, Social Care and Education at Anglia Ruskin University.

13. **What will happen to the results of the study?**
The results will be written up in a thesis as part of the requirements for the award of PhD. The results may also be published in journals or presented at conferences as part of my contributions to knowledge in the subject area.

14. **Contact for further information**
Opeyemi Osadiya

Department of Education,

Faculty of Health, Social Care and Education,

Anglia Ruskin University,

Bishop Hall Lane,

Chelmsford,

CM1 1SQ.

Tel:

E-mail:

Section B: Your Participation in the Research Project

1. **What will I be asked to do?**
You are invited to work collaboratively with me in order to achieve the aims of this research study. You are invited to be a co-researcher alongside me, assisting with the planning of the project with the children in your nursery. This means that from the beginning to the end of the project, you will be invited to help with the design of the activities, choosing methods of recording what is done and collecting information. I will also make sure that you are involved in deciding the findings and as well as seeing any written work, including the final report of the study.

I will be in regular contact with you as I intend to visit the nursery on a regular basis to work on the project with you and the rest of the nursery staff. The project is intended to last for two years.

2. **Will my participation in the study be kept confidential?**
I will be professional at all times and follow the nursery policies and procedures regarding confidentiality and data protection. The findings of the project will be written up in my final thesis.

3. **Use of quotes.**
I may sometimes use quotes from you and your colleagues in the dissemination of the project findings which may increase the likelihood that you could be identified. If you do not want this, please indicate this on the consent form at the end of the information sheet.

4. **Use of recording equipment**.
I may sometimes audio record interviews with you and your colleagues. This will be stored securely in my laptop and university computer which are password protected. In addition, I will comply with the nursery setting's policies on data protection and confidentiality.

5. **Will I be reimbursed travel expenses?**
You will not incur any travel expenses for the purposes of this project as participation in this project is expected to take place during your day-to-day working activities in the nursery.

6. **Will I be offered incentives to participate?**
You will not be offered any incentives to participate in this project.

7. **Are there any possible disadvantages or risks to taking part?**
This is a low risk project. It is understood that you may be wary of working with a stranger or think that this project may bring about additional workload for you. You may also have concerns about issues of confidentiality, especially regarding your being identified from the final report. You need to be assured that the researcher will be working collaboratively with you and your colleagues and all data collected will be validated by all practitioners working together. Also, your agreement to participate in the study does not affect your legal rights.

8. **Whether I can withdraw at any time, and how**.
You are free to withdraw from collecting and providing information for the project at any time without any penalties. You could either tell me or email your decision to me. You may either wish to withdraw from collecting and providing information for the study and have all your data removed or to withdraw but still be happy for me to use data collected by you up till your withdrawal point.

9. **Whether there are any special precautions you must take before, during or after taking part in the study.**
There are no special precautions to be taken. I have successfully applied for a Disclosure and Barring Service (DBS) check which has been returned as clear. This will be available on request. This is in addition to complying with the setting's Health and Safety policies while in the setting.

10. **If there is any information that participants may tell you that you would need to disclose to someone else (e.g. if you feel they are at risk, if they reveal anything of an illegal nature or if you are researching in an organisation and they reveal anything of an unprofessional nature) you need to state this on the participant information sheet. For further information, please refer to Section 3.14 of the Code of Practice for Applying for Ethical Approval at Anglia Ruskin University.**
In the course of conversations in this project, if you tell me anything which is deemed to be bad practice, for your safety and that of the children, it would be my duty to pass on such information to appropriate authorities in compliance with the nursery's policies.

11. **What will happen to any information/data that are collected from you?**
I will comply with all policies and procedures which relate to data protection and confidentiality within the nursery setting. Hence, all data collected will be securely stored in accordance with nursery policies and analysed at the end of the project to develop understandings of education for sustainable development. All data collected for the project will be destroyed after six (6) months.

12. **If carrying out qualitative interviews with participants, will they be shown a copy of the transcript? If so, state this and the process via which this will happen.**
This project is intended to be participatory in nature. Hence, you will be shown copies of any interviews and all data will be validated with you and other practitioners before the final report is written.

13. **Summary of research findings. It is good practice to send participants a summary of research findings wherever possible. This would be a summary rather than their individual results. If you will do this, explain the process via which this will happen.**
This project is intended to be participatory in nature. As earlier stated, all data will be validated with all nursery workers and we will agree a summary together before the final report is written.

14. **Contact details for complaints.**
If you have any complaints about the study, you may speak to me in the first instance or contact my supervisors whose names and addresses are detailed below:

Dr Paulette Luff,

Senior Lecturer,

Department of Education, Faculty of Health, Social care and Education,

Anglia Ruskin University,

William Harvey Building – Second Floor,

Bishop Hall Lane, Chelmsford, CM1 1SQ, UK.

Tel:

Dr Hazel Wright,

Senior Lecturer,

Department of Education and Social Care,

Helmore 303, Cambridge Campus,

Anglia Ruskin University,

East Road, Cambridge CB1 1PT.

Tel:

You may also e-mail any serious complaint to: complaints@anglia.ac.uk

Postal address:

Office of the Secretary and Clerk,

Anglia Ruskin University,

Bishop Hall Lane,

Chelmsford, Essex CM1 1SQ.

CONSENT

1. I agree to take part in the above project. I have read the Participant Information Sheet which is attached to this form. I understand what my role will be in this research, and all my questions have been answered to my satisfaction.

2. I understand that I am free to withdraw from the project at any time, for any reason and without prejudice.

3. I have been informed that the confidentiality of the information I provide will be safeguarded.

4. I am free to ask any questions at any time before and during the project.

5. I have been provided with a copy of this form and the Participant Information Sheet.

6. I agree to quotes from what I have said during interviews being used in the project.

Data Protection: I agree to the University[1] processing personal data which I have supplied. I agree to the processing of such data for any purposes connected with the Research Project as outlined to me*

Name of participant (print)…… Signed……. Date……

[1] "The University" includes Anglia Ruskin University and its partner colleges

Name of researcher (print)…… Signed……. Date……

YOU WILL BE GIVEN A COPY OF THIS FORM TO KEEP

If you wish to withdraw from the project, please complete the form below and return to the researcher named above.

15. **Title of Project**: Promoting education for sustainable development in the early years: An action research project.

I WISH TO WITHDRAW FROM THIS STUDY

Signed: _____ Date: _____

Appendix 6

Parental Permission for Children's Participation in Research

Title

Promoting Education for Sustainable Development in the Early Years: A Participatory Action research Project.

Introduction

The purpose of this letter is to provide you (as the parent of a prospective research study participant) information that may affect your decision as to whether or not to allow information about your child to be included in a small-scale research project that will be taking place at Northlands Park Children's Nursery.

My name is Opeyemi (Yemi) Osadiya and this project is part of my PhD Early Years programme at Anglia Ruskin University, Chelmsford Campus. I will be working with your child and their teachers at the nursery for the next two years to find out ways of working with children to encourage development of values, attitudes, beliefs and skills which empower them to contribute to a sustainable world. Sustainable development is a way for people to use resources in fair and careful ways so that there are sufficient resources for all in the short and long term. It is also about finding better ways to do things, both for the present and for the future. It is my belief that if these practices are to become permanent, then, they must start with children from a very young age.

Please read the information below and ask any questions you might have before deciding whether or not to give your permission for your child's details to be used in this project. If you decide to let your child be involved in this study, this form will be used to record your permission.

Purpose of the Study

Your child will have the opportunity to participate in an initial gardening project where they will work with other children, their teachers and myself in the nursery. As they work, they will be observed and listened to, as they care for the plants, fruit and vegetables in the garden. They will also be invited to take part in conversations to find out what they can do to sustain the garden and all the plants in it. This is intended to develop later from gardening into other areas of sustainable development such as how they can care for themselves, others and the community.

This project will take two years and all the children in the age range of 2 - 4 in the nursery are invited to take part. The information gathered with and from the children during my engagements with them will be used to write up my final PhD thesis. If you agree, I would like to include observations of your child, possibly including photographs or video of children working, in my study.

What are the risks involved in this study?

There are no foreseeable risks to participating in this project. The nursery staff carry out risk assessments which are related to their work in the nursery on a daily basis. All nursery policies will also be followed carefully, especially regarding the use and storage of photos and video. If at any time it is observed that the children feel uncomfortable working with me, I will just move away and let the nursery staff take over. The nursery staff are working on the project with me and they will see and agree to all of the information that I use.

What are the possible benefits of this study?

The possible benefits of participation are the enhancement of values, beliefs and attitudes which could help your child to contribute to a sustainable world. Findings from the project could also help to develop an understanding of how education for sustainable development can be promoted in the early years through various activities and how these could become integrated into the goals of the Early Years Foundation Stage.

Does my child have to participate?

Your child will be included in all nursery activities, and as with most activities, your child may choose to participate or not. Your child may decline to participate or withdraw from participation at any time. Withdrawal or refusing to participate will not affect their relationship with the nursery in any way. You can agree to allow your child to be in the project now and change your mind later without any penalty. You may either wish to withdraw your child and have all their information – observations, photographs or videos – removed from the study or withdraw them but still be happy for me to use data collected from working with them up till their withdrawal point.

What if my child does not want to participate?

In addition to your permission, your child must agree to participate in the study. A letter in the form of story asking for their consent will be given to them. I hope you will read it to them to help them understand the nature of the project. I will also read the letter to them when I meet them. If your child does not want to participate, their information such as photos, observations and evidence of their work, will not be included in the project, and there will be no penalty. If your child initially agrees to be in the study, they can change their mind later without any penalty.

How will your child's privacy and confidentiality be protected if s/he participates in this project?

Your child's privacy and confidentiality of his/her data will be protected by secure storage of all information and keeping personal details secure.

If you allow your child to participate in this project, your child may be observed, photographed and may also be audio/video recorded in addition to being asked to represent their thoughts and ideas through drawings and various other means. All the information and samples of children's work gathered will also be securely stored following the nursery's policies. It is important to reiterate that the nursery has robust procedures for protecting information and storing data for children. To ensure privacy and confidentiality, I will, as a researcher, discuss everything with the nursery manager and comply with all nursery policies.

Whom to contact with questions about the study

Prior, during or after your child's participation, you can contact the researcher – Opeyemi Osadiya - at X or send an email to X for any questions or concerns. This study has been reviewed and approved by the Anglia Ruskin University's Faculty of Health, Social Care and Education Research Ethics Committee.

You may also wish to contact my supervisors whose names and addresses are detailed below:

1. Dr Paulette Luff,

Senior Lecturer,

Department of Education, Faculty of Health, Social Care and Education, William Harvey Building - Second Floor

Bishop Hall Lane, Chelmsford, CM1 1SQ, UK

Telephone:

2. Dr Hazel Wright,

Senior lecturer,

Department of Education and Social Care,

Helmore 303, Cambridge Campus

Anglia Ruskin University

East Road, Cambridge CB1 1PT

Signature:

You are making a decision about allowing your child's activities and learning to be used for this project. Your signature below indicates that you have read the information provided above and have decided to allow them to participate in the project. If you later decide that you wish to withdraw your permission for your child to participate in this project, you may discontinue his or her participation at any time.

_____

Printed Name of Child

I agree / do not agree to my child's photos and videos to be used for this project

I agree / do not agree to conversations with and observations on my child to be used for this project

_____ _____

Signature of Parent(s) or Carer **Date**

_____ _____

Signature of Researcher **Date**

YOU WILL BE GIVEN A COPY OF THIS FORM TO KEEP

If you wish to withdraw your child's information from this project, please complete and return to the researcher named above.

Title of Project: Promoting education for sustainable development in the early years: A participatory action research project.

I WISH TO WITHDRAW INFORMATION ABOUT MY CHILD FROM THIS PROJECT

Child's name: _____

Signed: _____ (Parent/Carer) **Date**: _____

Appendix 7

Information leaflet for children 2 – 4-year olds.

(To be read to a child by parent/carer)

Dear (Child's name),

My name is Yemi and I hope to meet you soon. I am from a very big school called university. I am also called a researcher. This means that I talk with people to know about the special things they do and also the lovely ideas they have. I will tell you more about my work when I meet you.

I will be coming to your nursery to work with you and your teachers to find out how you help to care for the garden and Reggie the Rabbit at your nursery. I also want to find out how you recycle your rubbish. You can also talk to me and draw pictures to tell me how you look after yourself and others. Sometimes, I will watch you and your friends while you're playing, and I may also take photos of you and sometimes write about what you say as you play in the nursery. If you don't want any of these, you can let me know and I will stop.

I know that it's difficult to talk to someone you don't know, so I will understand if you do not want to talk to me. If you start to talk to me and you don't want to anymore, that's okay. If you get tired when you're talking to me, you can stop and have a break.

If you think of any questions you want to ask me, you can do that when we meet at the nursery. You might want to ask your mum or dad or carer to write your questions down and you can give these to your teachers.

See you soon,

Yemi.

Appendix 8

Interview schedule for practitioner interviews

- Can you tell me your name, please?
- How many years have you been working with children?
- How long have you worked in this nursery?
- What do you understand by the term ‘education for sustainable development’ (ESD)?
- Where did your perceptions/understandings originate from? Or: Who influenced you in your understandings of this term?
- How do you apply this knowledge to your practice in the nursery? Or:
- How do you carry out your work with the children based on your understandings of ESD? Or:
- What activities do you provide for the children based on your understandings?
- In just five words, can you tell me what you understand by ESD?

Thank you.

Appendix 9

Transcribed samples of diary entries

Thursday 21st April 2016.

I visited the nursery and was able to read the letter to the children.

There were 31 children on the carpet with the staff on hand. One of them took notes for me. She first of all informed the children that I will be talking to them about what I am going to do with them.

I introduced myself and read the letter to them. They listened attentively and with a few interruptions. Nevertheless, we were able to make progress.

When I mentioned that I am from a big school called 'university' where they will all go one day when they are big, one of them made a comment:

DJ: "*When I get big, I will go big university*".

Some of them expressed their interest when I explained that we will be working in the garden soon:

WJ: "*I'm going to help*".

AM: "*I want to grow sunflowers. Bumble bees like sunflowers*".

When I now mentioned that we hope to grow wildflowers so that bees will come into the garden, some of them said:

RD: "*Bumble bees sting*".

RD was assured that we will be careful so as not to be stung by any bees. Later, I was informed by one of the staff (who happens to be RD's mother) that that RD's father was stung by a bee when RD was about one and a half years old, but RD still remembers it vividly. But RD cannot understand that his father was stung by a bee because he was holding a sweet in his hand. Since then, he thinks all bees sting.

AM: "*Bumble bees collect pollen and then make honey*".

RD: "*They make honey*".

FB: "*Bumble bees take the flowers out, then takes them home to make honey*".

AO: "*I don't like honey*".

AO: "*I want to grow flowers*".

RD: "*We water flowers to grow*".

AM: "*Flowers need sun to grow*".

While they were out playing later, I was approached by RD who now commented:

RD: "*I hope they're nice bees, not naughty ones*".

Another child made a comment about the flowers:

FB: "*You've got to be patient and water them. You've got to watch them grow*".

WD: "*Bees make honey and we eat the honey. They love making honey and they eat the leaves*".

WD later called me that he saw a bee in the garden and when I got there, I did not see anything and I asked him if he actually saw one – to which he replied:

WD: "*I see'd (intending to use past tense of 'see') one*", to which I playfully corrected him: "*Oh, you mean you saw one …*?

Reflections:

I helped with cleaning out after their dinner at 12. Then I informed PR (practitioner) that I have ordered for a Starter Kit on bees which should arrive very soon. And then, I will get back to them.

I also observed that there were some children whom I have not seen since I have been coming to the nursery. I asked about them and I was told there are quite a few new faces. I will check out the consent forms later to see if I will need to do more copies.

It was a very busy day in the nursery, and I could not do any more interviews. I will have to find out the best time to come in and look through their list of children to compare with the list I have – to know who needs consent forms.

Thursday 19th May 2016.

Planting day!

Today is the day set out for planting the seeds and we are all ready for this. As I had discussed with the practitioners, this event had been planned to coincide with when the children would be out in the garden - by 14.15pm.

Together with the practitioners, we got the children involved in the planting. All the children were eager to help and took part in planting the seeds (based on their suggestions) provided for them. They also helped to water the seeds sown. There were some tears as some of them felt they were not given the chance to help, but we managed the situation well. We only managed to do two patches as the third patch for vegetables will be done later. The peppers and tomato seeds needed to be sown indoors, so some children offered to sow them in small pots which we put indoors with the promise that they will be transplanted into the vegetable patch once they start growing. It is intended that we will use one tyre for tomatoes, another one for the peppers and the last one for the runner beans that have been sown indoors by the children. Unfortunately, we could not transplant them in the third tyre because even though they have started growing stalks, we needed some sticks for the stalks to attach themselves to. PR has promised to bring in sticks for the runner bean stalks for us to use.

I finally left the nursery at almost 4pm. Very tired (phew!)

Reflections:
I need to make sure I go in on days that I will not be in university to sort out watering of the patches. I will not leave this for the nursery staff to do because they have so much work on their hands looking after the children.

Wednesday 15th February 2017

I visited the nursery and given the usual welcome by the children. It's always so lovely to see them. In fact, the welcome is always overwhelming! It was quiet as it is the half term. The children had their lunch and it was nice to see the children as they self-regulated themselves to use the correct bin for their food leftovers. One of them had walked to the normal bin and then realised that she was about to use the wrong one and quickly moved to the correct bin. This is so nice!

I later discussed with PR if I could use the quiet period to use the Little Earth Charter video with the children the next day and she said that there may be just about 6 children in. I then decided that maybe it would be better for next week when the nursery is in full swing. I then discussed with LR in the team room and she said maybe Tuesday afternoon.

This time, I went to the Centre reception to book a room and I was lucky to get one booked for the time I wanted: **2.30 – 3.30pm**. I came back to inform LR and they were all very happy.

Reflections:

It was good that I took things into my own hands to go and make the booking rather than leaving it to the practitioners to do. That made it faster. That's what I will be doing now. I will not wait for them as they are busy, too.

And, I am looking forward to starting with the first of the Little Earth Charter's principle of Life. I hope it all goes well.

Appendix 10

Table of practitioners' words for understanding ESD at start of research

Words as provided	Words as edited
Guidance for children	guidance (1)
Educating them further	education (2)
Teaching about seasons (1)	seasons (1)
Learning (1)	learning (1)
Respect (2)	respect (2)
Nurturing (1)	care (7)
Caring (2)	life (3)
Caring for living things (1)	-
Living things (1)	-
Life (1)	-
Looking after the environment (2)	environment (5)
Looking after animals (1)	animals (2)
Looking after others (1)	others (2)
Animals (1)	-
Future (1)	future (2)
Future for others (1)	-
Team working	team (2)
Working together	-
Child-led environment (1)	child-led (1)
Knowledgeable staff (1)	knowledgeable staff (1)
Positive practice (1)	positive practice (1)
Environment (1)	-
Recycle (4)	recycling (5)
Recycling (1)	-
Growing things (1)	growing (3)
Growing food (1)	food (2)
Growth (1)	-
Planting (1)	planting (1)
Food (1)	-
Love (1)	love (1)
Healthy (1)	healthy (1)
Hygiene (1)	hygiene (1)
Open-minded (1)	open-minded (1)
Understanding (1)	understanding (1)
Equality (1)	equality (1)
Fairness (1)	fairness (1)
Confident (1)	confident (1)
Structure (1)	structure (1)
Happiness (1)	happiness (1)
Origin (1)	origin (1)
Trees (1)	trees (1)
Reuse (1)	reuse (1)
The Earth	earth (1)
Sustainability	sustainability (1)

Appendix 11

Table of practitioners' words for understanding ESD at end of research

Words as provided	Words as edited
Recycling (4)	recycling (6)
Recycle (2)	-
Sharing (3)	sharing (3)
Care (1)	care (8)
Caring (3)	-
Care (1)	-
Care for environment (1)	environment (7)
Care of environment (1)	-
Caring for plants (1)	plants (1)
Respect for living things (1)	respect (1)
Living things (1)	life (3)
Future (2)	future (2)
Growing (3)	growing (7)
Growth (3)	-
Growing environment (1)	-
Self-care skills (1)	self-care (2)
Self-care (1)	-
Team reflection (1)	team (3)
Reflecting (1)	reflection (2)
Team working (1)	-
Team work (1)	-
Home-school learning (1)	home-school-learning (2)
Environment (4)	-
Education (1)	education (2)
Educate (1)	-
Ecosystem (1)	ecosystem (1)
Planting seeds (1)	planting (1)
Knowledge (1)	knowledge (1)
Where things come from (1)	origin (1)
Observing (1)	observing (1)
Kindness (1)	kindness (1)
Life (1)	-
Important (1)	important (1)
Home links (1)	-
Green fingers (1)	green-fingers (1)
Sustainability	sustainability (1)